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COMPUTERWORLD

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User end-runs VSE memory cap

Colleagues eager for patch despite risk of IBM support withdrawal

BY ROSEMARY HAMILTON
CW STAFF

Very Special Environment

VSE remains the primary operating system at a majority of mainframe sites

	Percent of market share 1985	1986	1987
MVS/SP	25.2	22.8	19.2
MVS/XA	2.9	6.5	11.4
VS/1	5.2	5.1	3.6
VSE, VSE/SP	54.1	54.4	55.3
DOS/VS	5	3.7	2.5
VM	2.4	2.8	3.3
Other	5.2	4.7	4.7

INFORMATION PROVIDED BY FOCUS RESEARCH SYSTEMS

A user-designed modification to the IBM VSE/SP operating system that greatly expands the virtual memory limitation is either being installed or under review at dozens of user sites.

According to VSE/SP users, the modification, or patch, brings the only cost-free relief to the 40M-byte virtual memory limitation that has long constrained VSE/SP sites. While modifying the operating system jeopardizes users' service contracts with IBM, many said it is a risk worth taking.

Without this patch, which was designed by data base and data communications administrator Pete Clark at Olan Mills, Inc. in Chattanooga, Tenn., users said they had few options for increasing virtual memory. They could either add VSE/SP virtual machines under VM or take the much more costly route of converting to IBM's VM or MVS operating systems. The conversion route has been recommended by IBM for a long time, users said.

Users contacted last week said they are satisfied enough with VSE/SP that they would rather search for their own ways to improve it than undergo a conversion to another IBM operating system.

"IBM would love for us to go to MVS," said Charles Rice, an assistant manager of information services at Carolina Steel Corp. who is running the patch in production mode. "But we couldn't afford MVS, and we don't want to go to MVS."

An IBM spokeswoman acknowledged that the company does not provide a similar capability for VSE/SP but said the firm has "kept abreast of this effort.

"IBM encourages its customers to provide suggested enhancements to our product line, including VSE/SP," she added.

According to users, the benefits of the patch are better performance and support for more users. Because many users are still testing the code, they said they did not want to commit to specific numbers. But Rice said he is "definitely supporting more users, and I'd say, on my production CICS, I've reduced the re-

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NBS admits Cobol test rules fuzzy

BY CHARLES BABCOCK
CW STAFF

A National Bureau of Standards procedure that few other vendors were aware of enabled IBM to have an unannounced mainframe Cobol 85 compiler tested privately last month. But NBS officials said the procedures are confusing and will be speedily rewritten.

NBS officials declared last week that IBM was within established procedures when it asked that the test of what is anticipated to be the Cobol 85 version of its VS Cobol II compiler be kept off the NBS published schedule [CW, Nov. 30].

Bureau officials said IBM has been the only vendor to invoke the out-of-sight testing process in the 18-month period during

Continued on page 76

Oracle tying 1-2-3 into DBMS web

BY DOUGLAS BARNEY
CW STAFF

BELMONT, Calif. — Distributed data base pioneer Oracle Corp. will butt heads with Lotus Development Corp. next month with an add-in product that allows Lotus 1-2-3 users to access data on Oracle's line of microcomputer and host data base management systems.

The product will compete directly with an unreleased Lotus product code-named Lotus/DBMS, an SQL-based local-area network DBMS that will reportedly provide a 1-2-3 interface.

Oracle, which has grown rapidly with a line of SQL-based DBMSs that run on many different computers, will announce its product next month, President Lawrence J. Ellison said.

Coming right up

Dubbed Oracle Database Add-In for Lotus 1-2-3, the product will be available in the first quarter of next year. Observers said they do not expect Lotus/DBMS to be

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POLAR PIONEER

Toy maker averts disaster with CIM plan

BY PATRICIA KEEFE
CW STAFF

It's true. Santa *does* know if you've been bad or good. He even knows if you skimp on tape backup. But he doesn't know beans about factory automation and computerized order entry.

So don't blame him if he's a little fuzzy on the events that occurred at the North Pole on the afternoon of Dec. 24, 1986. That was the day his operations and factory assembly line almost ground to a halt. "It was chaos, chaos, I tell you," blazed Rudolph, chief transportation engineer at Santa's Workshop. "It'll go down in history around here."

The sleigh must go out, of course, and somehow jolly Kriss Kringle managed to squeeze past a tight deadline last year — and just in the nick of time, too — enabling him to delight millions of satisfied customers worldwide.

But once the glow of the holiday rush faded, Santa and

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AMY J. SWANSON

NEWSPAPER
SECOND CLASS

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High-tech summit. Wang and DEC offer information exchange to users of Wang Office and DEC's All-In-1 via Wang's Interoffice, which uses a serial link to connect the Wang VS to the VAX. Page 8.
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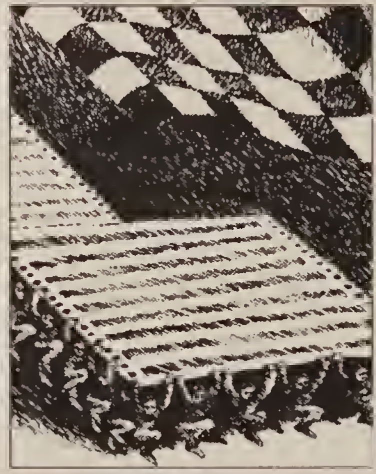

Can challengers outrun 1-2-3? Follows page 40.

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> *"Right now, the 3090 is a big old ugly box. You look at it, and it's like looking at a bookcase. We want some flashing lights so we can give demos to visitors without having to apologize for the machine."*
>
> JOE VINCENT
> HUMANA, INC.
>
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1706 still standing

Last congressional move to modify tax law dies

BY DAVID A. LUDLUM
CW STAFF

The effort to reverse the impact of last year's federal income tax reform on independent computer consultants and professionals has joined the victims of October's stock market collapse — at least for now.

The last surviving congressional proposal to modify Section 1706 of the Tax Reform Act of 1986 was dropped from a budget reconciliation bill during a conference to resolve Senate and House of Representatives versions of the bill.

The action was taken as congressional leaders turned the reconciliation bill into a vehicle for cutting the federal budget deficit, an undertaking prompted by the stock market debacle.

Section 1706 unchanged

That led to the elimination of any measures that would reduce federal revenues from the bill, including the one to amend Section 1706, according to Joseph Gale, tax counsel to Sen. Daniel P. Moynihan (D-N.Y.), who sponsored Section 1706 and the proposal to amend it.

"Under these guidelines, the 1706 changes probably will not be in this year-end [budget reconciliation] legislation," Gale said. In all likelihood, the proposal will be resurrected sometime in the first quarter of next year when Congress acts on a bill for "technical corrections" to the tax reform act, he added.

Moynihan's proposal would have repealed Section 1706 for the purpose of income taxes, not including the Federal Insurance Contributions Act — better known as FICA — employment tax, but would have imposed 10% income tax withholding on affected technical service workers.

Section 1706 rescinded tax code provisions that allowed many computer consultants and professionals to pay taxes as independent contractors rather than as employees of firms that place them in contract jobs.

None of the proposals to amend Section 1706 that were raised in the House of Representatives survived in the House version of the budget reconciliation bill.

Holiday cheer brings IBM net to its knees

BY PATRICIA KEEFE
CW STAFF

ARMONK, N.Y. — The ghost of Christmas Present weighed heavily on IBM's internal network on Dec. 11 as an electronic seasonal greeting managed to wrap the global link in knots for a few hours.

An unknown programmer, possibly brimming over with holiday spirit, created an electronic Christmas card designed to boomerang throughout the network. The successful chain letter also delivered a strong hit to the network's performance.

The message consisted of two parts: an innocent greeting with a graphic of a Christmas tree and an underlying program designed to rifle through each recipient's personal files in search of automatic routing lists. As each name on those lists received a copy of the message, the cycle repeated itself, haunting the network and slowing deliveries. No files were lost, however.

IBM was able to track the problem and resolve the major service impact within a matter of hours, a spokesman said. "Essentially, we trapped the files and deleted them."

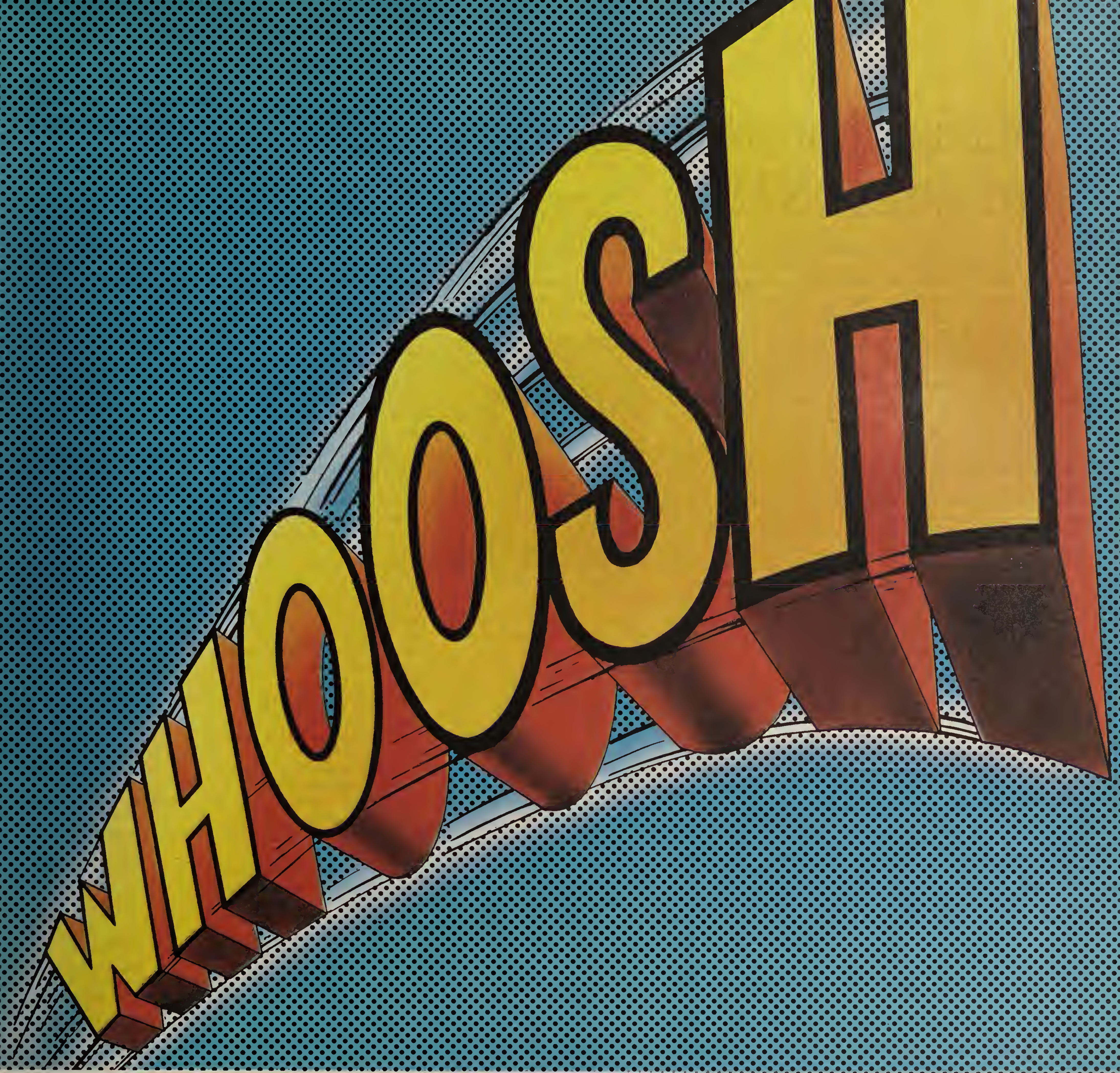
Users were alerted not to execute or store any messages unless they knew either the sender or the file's specific purpose. If in doubt, they were instructed to contact information management.

IBM has not yet located the culprit, but a spokesman said the firm suspects the message came from outside of the company. Several customer and supplier networks are attached to the IBM network.

> AN UNKNOWN programmer, possibly brimming over with holiday spirit, created an electronic Christmas card designed to boomerang throughout the network.

"We think we can find the source; we're reviewing our operational records right now," a spokesman said.

IBM is also confident that it can prevent further disruptive messages from clogging its bandwidth.



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IBM migration pain spurs shift to NAS

BY JAMES CONNOLLY
CW STAFF

LOWELL, Mass. — A growing savings bank concerned about the headaches of migrating from an IBM 4381 to an IBM 3090 mainframe has become one of the first U.S. customers for National Advanced Systems' (NAS) alternative to the 4381.

Comfed Savings Bank installed the NAS AS/VL 50 on Veterans Day and has moved the machine into a production role, primarily for mortgage banking, after benchmarks showed it performed at the promised level of about 7.5 million instructions per second (MIPS).

Lowell-based Comfed sought out NAS and committed to the Hitachi Ltd.-built IBM-compatible CPU after bank officials read about the AS/VL 50's introduction to the European market in March.

"When we read about it, it hadn't even been introduced in the U.S., and we actually had to pursue them. We had never had any dealing with NAS before," said Paul D. Keenliside, senior vice-president for data processing at Comfed.

Prior to March, Keenliside said, Comfed had planned to move from an IBM 4361 Model 5 into the 4381 line. But the bank became concerned about growth paths within the 4381 family when expected follow-on products such as a CMOS-based replacement failed to appear.

To get 7.5 MIPS from an IBM system, Comfed would have needed a 4381 Model 24, which is the top-of-the-line 4381 processor. To grow from there, Comfed could only move to a 3090, which involved expense and floor space considerations because of water cooling.

'Right place at right time'

"Look, NAS may not be the answer all of the time, even for us. But NAS took to the forefront to capture this marketplace. Sure, there was apprehension on some people's part about not going with IBM. And, if we were looking at the larger NAS AS/XL, the 3090 and Amdahl at the high end, it might be a different story. But NAS was in the right place at the right time," Keenliside said.

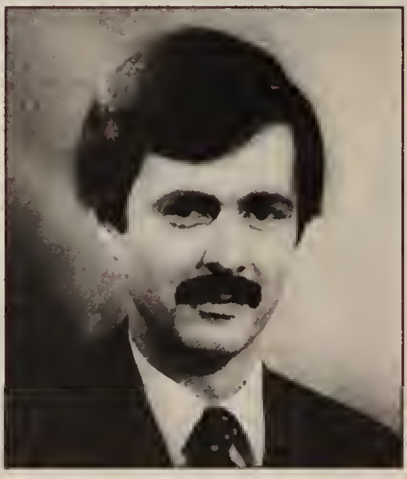
What convinced Comfed to acquire the AS/VL 50, according to Keenliside, was the machine's price/performance and expansion capabilities.

The AS/VL 50, which is the mid-range model of three NAS AS/VL uniprocessors, can be upgraded to a 10-MIPS AS/VL 60 within the same 16.1-sq-ft frame or to a 17.1 MIPS dual-processor AS/VL 80 with a 3-sq-ft extension of that frame. Keenliside also noted that the AS/VL supports more and faster channels for greater aggregate I/O throughput than the 4381.

The availability of faster uniprocessors also allows Comfed to continue using the uniprocessor-oriented IBM DOS/VSE, which the bank runs with IBM's VM.

Comfed said it wants the expandability because of the bank's growth in recent years. Comfed reported assets of $589 million in 1983 and $1.29 billion in 1987.

The company, which supports its retail banking with NCR Corp. systems, automated its mortgage operation seven years ago with a Wang Laboratories, Inc. VS minicomputer. The mortgage operation outgrew that computer, leading Keenliside to commit to the IBM 370 architecture with an IBM 4331 in 1984.


Paul D. Keenliside

With mortgages being processed at a rate of up to 20,000 per year, Comfed moved to the 4361 and eventually to a 4381 Model 2 that served as an interim host for three months.

With the commitment to the 370 architecture, Comfed is considering moving more corporate processing to the NAS machine.

Keenliside noted that mortgage processing differs from general computing in that the mortgage operation uses floating-point processing for all calculations, which makes the AS/VL 50 act like a scientific system.

"This particular machine has excelled. We don't have an MFLOP [million floating-point operations per second] rating yet, but we benchmarked it against the 4361 and 4381, and in almost every category it did proportionately what you would expect from a 7.5 MIPS machine. When the Linpack tests are done, we expect it to have even better than a 3-1 ratio improvement over the 4381. That's meaningful to us, where we do so much floating-point — or what you would call compute-intensive — work," Keenliside said.

Comfed senior systems programmer Cy L. George ran a 400K-byte benchmark and found that the CPU runs at least as fast as NAS promised. But he also noted that Comfed ran into expected I/O problems with the AS/VL 50 because the CPU outpaced Comfed's I/O system.

George said he plans to reorganize the I/O system by reallocating high-use files and minimizing physical I/Os.

Upgrades coming

Keenliside said Comfed will be upgrading its current 7.5G-byte string of IBM 3380 disk drives to a 20G-byte string next month. He is also looking at ways to move more files onto solid-state disks, particularly CICS temporary storage and VSAM indexes.

Keenliside said key benefits associated with the AS/VL 50 include space savings and a $300,000 savings on a three-year lease in comparison with the cost of a 4381.

In measuring performance, he noted that a typical mortgage banking task, such as updating all relevant files when the amount of money sought in a loan application changes, takes 55 seconds on the 4331 and less than one second on the AS/VL 50.

Dbase tease leaves viewers annoyed

BY ALAN ALPER
CW STAFF

NEW YORK — They came to feast on a glimpse of the new release of Dbase. But they left still hungry.

That was the unfortunate circumstance for a group of some 400 consultants and developers in the Ashton-Tate Corp. Dbase market who last week descended on a meeting hall here. The group expected an Ashton-Tate official to provide specifications of a long-awaited product that the industry is calling Dbase IV. Instead, they received a laundry list of the firm's design goals for the product, which is still believed to be in alpha testing.

The meeting, billed by the New York Personal Computer users group (NYPC) as "a dialogue with Ashton-Tate and a peek at Dbase IV," shed little light beyond already reported speculation of what the product will look like when it is eventually released sometime next spring [CW, Sept. 21].

The Ashton-Tate official, Willem Stoller, director of advanced data base products, faced a hostile audience after declining to provide additional details. One observer stood up in the middle of the presentation and declared that Stoller had wasted the audience's time by telling them what many had already read in the media.

"I'm only interested in discussing what we considered addressing as design goals — not what will be in the product," Stoller responded.

Following that statement, almost half of those in attendance exited the meeting room. Only a handful of people was left at the meeting's conclusion.

"I was extremely disappointed," said Larry Josephson, chairman of the Dbase special interest group of NYPC and president of a consulting firm that bears his name. "I understand Willem's position that he was not authorized to say any more than he did, but he did approve the title we gave to his discussion."

Giving up the wait

Many of Ashton-Tate's estimated two million Dbase customers have waited almost two years between major releases of the leading single-user data base management system for micros. Some have given up waiting for speed improvements and functionality enhancements and have gravitated toward Dbase work-alike products such as Fox Software, Inc.'s Foxbase.

Observers have reported that Ashton-Tate is worried about releasing product specifications for Dbase IV until all development work is completed. Some of the work, such as connectivity with various computing platforms, is believed to be in the hands of outside contractors.

Ashton-Tate is believed to be taking a kitchen-sink approach by adding a variety of user-requested functions, such as improving the response time of the product, enhancing its report writing capabilities and adding a compiler for pseudocode.

Asked why the firm does not release the product in its current stage and provide periodic updates as development work is completed, Stoller said such an approach would be costly and would further delay the product's introduction. "For us, it's not a matter of doing the work quickly; it's a matter of what is acceptable," he said.

Stoller said Dbase IV will offer an implementation of IBM's SQL, modeled after that company's DB2 mainframe DBMS. He also attempted to rebuff reports suggesting that the product's SQL capabilities would be meager. SQL, he said, "will be built into the Dbase language. It will be an integral part of the data base engine."

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ADAPSO battles IBM code policy on two fronts

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — ADAPSO, the association of independent software vendors, has started shopping for government support in its battle against IBM's source code and bundling practices.

The first stop was the European Economic Community (EEC) in Brussels last week, where ADAPSO representatives met with the EEC's antitrust department. This week, the ADAPSO delegation is scheduled to meet with the staff of the U.S. Department of Justice's Antitrust Division and the Federal Trade Commission's Bureau of Competition.

ADAPSO spokesman Christopher R. Carleton called the visits purely educational, but the underlying threat is that ADAPSO could pursue antitrust litigation against IBM for what ADAPSO members consider anticompetitive behavior.

The scrappy trade association objects to IBM's policy of releasing object code rather than source code to independent software vendors and IBM's practice of bundling software products in packages such as its OS/2 Extended Edition [CW, Nov. 23]. IBM defended the policies and said it does not plan to change them.

First step

The ADAPSO meeting with the EEC staff "was the first step in establishing a dialogue," Carleton said. "They listened to what we had to say . . . and they've asked us to keep them apprised as things go on."

The delegation, led by ADAPSO General Counsel Ron Palenski, included executives from Applied Data Research, Inc., Software AG of North America, Inc., Cullinet Software, Inc. and VM Systems Group, Inc.

ADAPSO officials said they hope the European organization will be especially receptive. The EEC suspended its antitrust suit against IBM in 1984 but said it would continue to monitor the issue of source code. The association has developed an 11-page position paper that calls for IBM to stop bundling software products and to allow outside vendors to obtain source code on a need-to-know basis, subject to safeguards that protect IBM's proprietary information.

After ADAPSO threatened to hold talks with government agencies in September, individual ADAPSO members met with IBM to seek concessions [CW, Nov. 16]. However, ADAPSO was frustrated by the lack of progress at those meetings and, on Dec. 9, decided to take its case to government officials, Carleton said.

IBM spokesman John H. Mihalec said ADAPSO's demand that IBM discontinue its object code-only policy is "uncalled-for and unnecessary." He said IBM works with software developers on a case-by-case basis to help them develop interfaces with IBM programs.

As a last resort, IBM will release the source code for selected modules to solve special problems, Mihalec said. "However, we're not prepared to ship source code for whatever purpose some other company may wish to use it," he said.

ADAPSO officials stressed that they are not seeking unlimited access to source code. ADAPSO's proposal would require the software vendor to provide written justification for the source code, which IBM could challenge.

IBM's practice of providing "user exits" in the object code is an inadequate solution to the problems faced by developers who need to enhance or change the function of an IBM program, ADAPSO said.

IBM said the bundling charge is without merit because IBM also sells the individual programs separately, enabling customers to choose IBM and non-IBM products.

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Telex accepts Memorex buy-out

Skirts hostile takeover bid by Edelman with $911 million sale

BY CLINTON WILDER
CW STAFF

Two of the world's largest IBM-compatible peripherals companies will combine early next year. Telex Corp. last week agreed to be acquired by Memorex International N.V. for a sum of $911.4 million in cash and stock.

After Telex's board unanimously accepted Memorex's white knight offer, arbitrageur Asher B. Edelman abandoned his 2-month-old hostile takeover attempt of Telex, which is headquartered in Tulsa, Okla. Shares that were tendered to Edelman's TLX Acquisition Corp. will be returned to shareholders to be tendered to Memorex for $62 per share.

The new company, which will be renamed Memorex Telex N.V., will have revenue that is close to $2 billion and will combine Telex's solid U.S. market share of IBM 3270-type terminals with Memorex's strong overseas presence in markets for terminals and storage devices.

However, the new company will additionally be saddled with a considerable debt, since London-based Memorex is still in the process of paying off debts that are associated with its leveraged buy-out by Unisys Corp. late last year.

Awkward options

Nonetheless, analysts said the merger is positive for both companies. Before Memorex emerged as a suitor, Telex had been faced with two unsatisfactory options: being taken over — and possibly broken up — by Edelman or fending off the hostile takeover with what would have been a very costly stock recapitalization plan.

"Telex will have some control over its destiny, which, of course, would not have been the case with Asher," said analyst Jim Poyner of Dallas investment firm Rauscher Pierce Refsnes, Inc. "It certainly makes more sense than combining with Datapoint Corp. or Intelogic Trace, Inc." Edelman is chairman and controls a majority of the stock of those companies, both based in San Antonio.

Memorex and Telex have been fierce price competitors in the 3270 terminal market, of which Telex held a 16% U.S. market share in 1986 and Memorex controlled 5.2%, according to International Data Corp. But the combined company will still face continued price cuts from IBM, which controlled 53% of the market.

"IBM seems to be willing to accept lower profit margins than it used to and has been a lot more aggressive on pricing," said John Rutledge, an analyst at Dillon Read & Co. in New York. "Telex's strategy had worked well for the past eight years until that began to happen."

Pricing challenges

In an interview last week, Memorex Chief Executive Officer Giorgio Ronchi admitted that pricing will remain a challenge for the combined company. "At best, prices will go down more slowly," he said. "But I think we will be able to respond better to IBM."

Ronchi said an eventual Memorex-Telex pairing would probably have occurred without Edelman's bid for Telex. "After the leveraged buy-out, we weren't looking at doing anything like this so quickly," he said, "but Edelman was the trigger."

Telex had considered buying Memorex when Unisys was seeking to divest the organization in 1986, and Memorex had been eyeing Telex even before that time. Memorex had acquired parts of Telex's European business 10 years ago, a buy-out that Ronchi called "one of the finest we ever made."

Debt-carrying

Rauscher Pierce's Poyner estimated that Memorex Telex initially will carry some $1.2 billion in debts. He speculated that some manufacturing and sales functions will be consolidated and that the firm may consider divesting Telex Communications, Inc., a Minneapolis-based subsidiary that makes noncomputer products such as hearing aids, microphones and industrial antennae.

However, Ronchi expressed confidence that the acquisition can be digested without any drastic sell-offs or cutbacks. "If anything will be done, it will be minor," he said.

Telex customers contacted last week were noncommittal about the vendor's future. "I have no reason to think there will be any changes," said Paul Fenoglio, manager of computer services at Commonwealth Edison Co. in Chicago, which uses some 700 Telex terminals.

The acquisition is still contingent on Memorex obtaining $750 million in bank loans from Morgan Guaranty Trust Co. and other banks and $200 million in subordinated notes, commonly known as junk bonds, to be arranged by Drexel Burnham Lambert, Inc.

At A Glance

Memorex International N.V.

Headquarters: London
Formed: 1961;
1981 - acquired by Burroughs (now Unisys);
1986 - acquired in leveraged buy-out by Memorex International Management Group
Revenue: Approximately $1 billion
Products: IBM-compatible disk and tape drives, 3270 terminals, controllers, printers and workstations
Employees: 5,600

Telex Corp.

Headquarters: Tulsa, Okla.
Formed: 1950
Revenue: $709 million (1986)
Products: 3270 terminals, controllers, printers; System/36 and 38 terminals; airline reservation terminals
Employees: 8,000

CW CHART

Zenith in OS/2 pool

BY ED SCANNELL
CW STAFF

GLENVIEW, Ill. — Zenith Data Systems last week became the first OEM to ship a version of Microsoft Corp.'s MS OS/2 operating system. The system is tailored to run with the company's ZDS Z-200 and Z-300 personal computers.

Because it worked closely with Microsoft in developing the MS OS/2 adaptation kit, Zenith was able to beat other PC-compatible makers to the market, according to a Zenith spokesman.

The kit allows other PC manufacturers to make OS/2 compatible with their systems. It contains the tools and documentation required to develop device drivers for the kernel of MS OS/2 and the manufacturers' own hardware devices.

The kernel portion of Zenith's version is identical to IBM's product. However, the binary adaptation kit, which serves as a buffer between the kernel and the hardware, is different in that it is tailored to address Zenith-specific hardware.

With the exception of its price, Zenith's version of OS/2 is the same as IBM's recently shipped version, according to Glen Nelson, a Zenith spokesman. IBM's OS/2 is priced at $325, while Zenith's costs $299.

Zenith shipped the product "in the dozens, not by the hundreds" to corporations and dealers, Nelson said. He added that he does not think the company will be shipping in the "triple and quadruple digits" until there are more applications available early next year.

VSE memory

CONTINUED FROM PAGE 1

sponse time by a third."

"The main benefit for us was the ability to expand the virtual memory needed by applications rather than an extension of the number of users," Clark claimed.

IBM's VSE/SP is set up with three address spaces. It can accommodate a maximum of 16M bytes of real memory and 40M bytes of virtual memory.

Clark's code modifies this structure, which is specified in the supervisor of the operating system. The code does two things: It increases the number of address spaces to eight, and it expands the virtual memory to 128M bytes.

Clark said he has sent out 160 copies to date. He mailed a few initial copies in July and made the code generally available in November. He is providing the seven pages of code and documentation at no charge.

"The three address spaces are not a real limit," Clark said. "I think it may be a marketing decision. IBM doesn't want to give MVS too much competition. It doesn't want to extend VSE and slow down the conversion ratio."

Doesn't solve problems

"I share the same sentiment as many VSE users," explained Steven Kannard, manager of technical support at the Connecting Devices Division of Hughes Aircraft Co. "We feel IBM's approach of limiting us to 40M bytes doesn't solve our problems."

Kannard, along with other users who are either testing the patch or planning to install it, applauded Clark's efforts. They said that IBM has not provided an inexpensive or easy way to expand their systems, a situation that has forced a fellow user to solve the problem for them.

The users also said they are willing to risk jeopardizing their support contracts with IBM by using the patch. Once a user modifies the operating system, IBM will only solve system problems if the user can re-create the problem in an unmodified environment.

'A calculated risk'

"This is a calculated risk," said a manager of technical services at a New York company who asked not to be identified. "You do take your life in your hands if you do it, but I'm willing. The code is clean and easy to back out of," he added.

One user cautioned that the patch requires 16M bytes of real memory. With 8M bytes of real memory on his host, William Dodge, senior systems programmer at the National Wildlife Federation in Vienna, Va., said, extending virtual memory would be too taxing on the real memory and would slow the system down.

In a virtual memory environment, instructions in virtual memory must be moved, or paged, to real memory before they can be executed. If a user expands virtual memory without having enough real memory to accommodate the additional instructions, he defeats the purpose of expanding his system, Dodge said.

'Performance issue'

"I would recommend a minimum of 16M bytes of real," Clark said. "Not that it won't work with eight, but it's a performance issue."

Three users currently running the patch — one in production mode and two in test mode — said it was easy to install and that they ran into no glitches once it was running.

Kannard at Hughes Aircraft said he has been experimenting with Clark's patch since May. Up against the 40M-byte limit on an IBM 4481 running VSE/SP 3.1.1, Kannard could have either created more VSE/SP virtual machines or "explored an MVS conversion."

Instead, he installed the patch. He currently has six address spaces and 80M bytes of virtual memory established. The main benefit is being able to support more users under CICS, he said. "This patch means I can run more than one copy of CICS at a time."

Rice, at Carolina Steel, is also using the patch to expand his CICS environment. "I needed a third CICS and didn't have enough storage," Rice said. Without the patch, "I would have lived with two and stood still. I had nowhere to put [the third one]."

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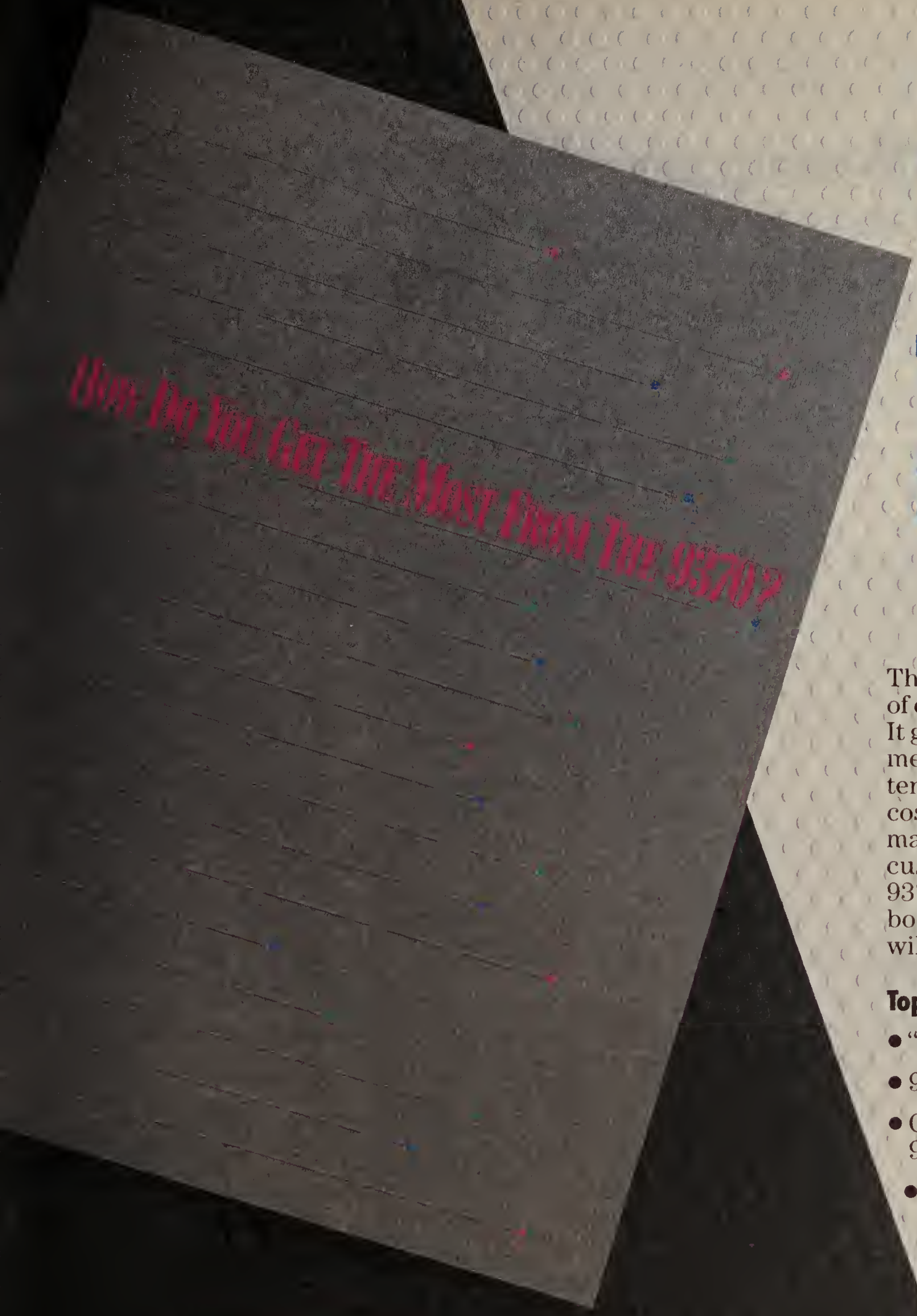

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Pay up on promises, IBM users say

Working OS/2, 'MIPS meters,' Silverlake top wish list for 'Santa' Akers

BY MICHAEL SULLIVAN-TRAINOR

'Twas the night before Christmas and all through the shop, not a system was running, you could hear a pin drop.

The printouts were hung by the disk drives with care, in hopes that John Akers soon would be there.

The managers nestled all snug in their beds, while visions of Blue-ribboned gifts danced in their heads.

If IBM's chief executive officer really wanted to play Santa Claus, he could make many MIS managers happy by carrying through with this year's promises and adding a few new twists to current products and services, according to managers surveyed by *Computerworld.*

"We would like some flashing lights to go on the outside of our 3090," says Joe Vincent, director of computer performance and capacity planning at Humana, Inc. in Louisville, Ky. "Right now, the 3090 is a big old ugly box. You look at it, and it's like looking at a bookcase. We want some flashing lights so we can give demos to visitors without having to apologize for the machine."

No coal, please

Humana's MIS staff would also like to see "MIPS meters" stuffed in their stockings. The meter, when attached to IBM hardware, would register millions of instructions per second (MIPS) within the computer's capability.

"We measure our systems in terms of CPU service units per workday," Vincent says. "But our executives simply will not abandon the idea of MIPS. All we would have to do when they come by is point to the meter."

Other managers have their hearts set on more substantial presents.

"Right now, what I'd like most for Christmas is the working version of OS/2 and the data base connection with the host data base," says Greg Burnham, associate MIS director at Bristol-Myers Co. in Wallingford, Conn. "I could use it this week or in January, rather than when it is supposed to be here" in late summer.

Silver bells, Silverlake

Likewise, Greg Mills, data processing manager for Louisiana-Pacific Corp. in Samoa, Calif., needs IBM's mid-range successor — called Silverlake — to the System/36 and 38 now.

"We're running into a capacity problem, and we are restricted in the amount of remote terminals we can attach on our System/36," he says.

At Einhart Corp. in Hartford, Conn., David Dandro, vice-president of MIS, is also waiting for the fulfillment of IBM's 1987 intentions.

"If Santa Claus could give us real transportable software media that we could move from system to system without having to change it, rather than just the words of the Systems Application Architecture, we would be very happy," Dandro says.

Making a list

MIS executives would like IBM to deliver

Dear Santa,
As a busy MIS executive,
I would like the following
items for Christmas:
- MIPS meters
- Silverlake
- Support
- Reliability

Please see the
accompanying
floppy for additional
hints.
Thanks!

CW CHART: FRANK C. O'CONNELL

Larry Tilley, remote job entry center manager for J. C. Penney Co. in Manchester, Conn., is easier to please. All he wants is a software package that allows a remote user immediate access to a host system log without a long delay. Currently, delays of more than two minutes occur when Tilley tries to access the system log at Penney's Atlanta-based host.

"If you're sitting right at the host, you have almost instantaneous response," he says. "The delay is a tad aggravating.

"Otherwise, we're pretty happy. St. Nick has been good to us in the past — my service man shows up when I want him and does what I need done, my contacts with IBM are very good, and they haven't screwed up my billing in ages," he added.

Now *that's* a request

Like Kriss Kringle, IBM's Akers will have some tough orders to fill. Many managers added complete style changes for their favorite vendor to their Christmas lists.

"I would like IBM to show more consideration for the customer in moving from one generation of hardware and software to another," says John Najberg, supervisor of DP audits for LTV Corp. in Dallas.

While he likes IBM's basic marketing style, Najberg disagrees with the company's support of incompatible systems that offer different architectures to users.

"They set up a number of different directions with their machines, and then they wait and see which ones float and which ones sink," he says. "If you happen to make a good guess, it's great. If you make a bad guess, it's tough luck. The customer needs to be protected against those kinds of experiments."

Louisiana-Pacific's Mills also wants a guarantee of future support slipped under his Christmas tree.

"They could be a little more straightforward about what's going to happen in the future instead of beating around the bush," he says. "They tend to build a line of systems and place limitations on them. Then you almost have to be past your limitations before they come around to rescue you with a follow-on product."

Snubbed by Santa?

Another MIS manager, who declined to be named, is hoping that the IBM version of Santa and his helpers will just visit him this year. "They don't call. They don't write. They don't see me anymore," he says.

Similarly, Gene Lallier, MIS director at Stanley-Bostitch, Inc. in East Greenwich, R.I., misses the IBM of Christmas past.

"If I could wish for a Christmas present, it would be for a lot more hand-holding," Lallier says. "We could use some help in planning our future."

For some managers, the best gift they could receive would be to see less of IBM.

For example, in terms of service, Einhart's Dandro would like his systems to be so reliable that IBM service representatives would be as lonely as the television Maytag repairman.

"It would be great if we would never have to call them," he says.

Wang opens gateway to DEC offices

BY NELL MARGOLIS
CW STAFF

LOWELL, Mass. — The spirit of summitry continued last week as Wang Laboratories, Inc. offered its users and DEC's an unprecedented opportunity to work together.

A series of same-day announcements from Wang opened a broad avenue of information exchange between Wang and Digital Equipment Corp. office automation systems and, further, gave DEC VAX users access to IBM office systems.

Interoffice, a software product designed for Wang by The Boston Software Works, Inc., is said to offer users of the Wang Office software system the ability to exchange documents and mail with users of DEC's All-In-1. Using an RS-232C serial link to connect the Wang VS to the VAX, the gateway gives users transparent access to each other's office applications products, according to Jackie Appel, group marketing manager for office applications at Wang.

"In either environment, users can continue to work with their familiar screens and commands," Appel said. The software translates Wang Word Processing and WP Plus documents to and from DEC's WPS-Plus without user input, she added.

Moreover, Appel said, the advantages Interoffice offers to VAX users extend beyond those of Wang office. Wang/IBM gateways currently in place will allow VAX-based Interoffice users to exchange information with IBM Professional Office System and Distributed Office Support System users.

Two Wang utilities debuted simultaneously with Interoffice. Wang's VS CopyWITA and PC DIU Release 1.5 further broaden information-pooling possibilities. Both are based on the Wang Information Transfer Architecture (WITA), a software applications set created to support information integration.

Interoffice reportedly will be available next month at license fees ranging from $6,500 to $24,000, depending on the sizes of the respective systems. Also slated for January availability, VS CopyWITA reportedly will cost from $250 to $1,000, depending on VS system size. PC DIU Release 1.5 is set to be licensed for $100.

Toy maker

FROM PAGE 1

his staff hunkered down to assess the situation.

After 200-odd years, they had finally outgrown their mom-and-pop setup. Clearly, they had to automate. But how? And even if they did, the best toy shop in the world was useless without a steady stream of orders. There was no mechanism for monitoring those orders that managed to wend their way across the frozen ice floes. And out in the workshops, the factory floor was sheer bedlam.

That was no way to run a time-sensitive business, Mrs. Claus conceded. "Every lost minute means a potentially disappointed child."

"Well frost my shorts," Santa snapped, "*You* try maintaining some control with all these cantankerous elves underfoot!"

The elves were bound and determined to maintain control of their operation. They pouted as visions of CAD/CAM systems and robotics danced in their heads.

"Isn't there some kinda MAP with directions on how to automate?," Rudolph asked.

"Have you been sniffing that TCP/IP again? You know I can't read maps," Santa growled.

After much squabbling, a suggestion arose from an unlikely quarter.

"We were wasting time, and time, as you know, is money," glared Ebbie Scrooge, chief financial officer. He suggested the problem be turned over to consultants Cratchit & Grinch. Bob Cratchit is a born pencil pusher, and The Grinch is a master at tearing things apart and rebuilding from scratch.

Right away, The Grinch moved to rid the Clauses of their dependence on paper orders and receipts and protect them from the instability of polar weather. To ensure immediate turnaround on all paperwork, an electronic data interchange system was added. "This way, any customer old enough to spell can access Santa's mailbox," he said.

The next step was to restore order to the factory floor, while also improving productivity. A network of terminals could be used to speed order delivery and keep track of who was handling which invoice using what materials. "Think of the potential here for a bonus system based on productivity," The Grinch leered. Outfitted with graphics and automated design components, those same terminals could be used to design products and ensure product quality, he said.

"Why, we can do twice as much work with even more detail," the elves shouted out with glee.

But best of all, twinkled Santa after the initial run-though, the newly automated workshops will serve to guard against the return of that Christmas past.

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David C. Grigsby
General Manager, Manufacturing

It's not easy for a company to put a lid on a manufacturing system purchase decision. Continental Container Systems certainly knows that. Before they settled on Cullinet's Manufacturing System (CMS) software, they analyzed over 200 vendors.

Continental Container Systems is a large multinational company that manufactures the closing equipment to put lids on scores of major-brand canned items. Everyone in the division knows how important it is to be a viable, long-term supplier. And a viable, long-term supplier of information management technology was what Continental Container Systems' end-user selection committee saw in Cullinet.

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At Continental Container Systems, CMS has already improved inventory turns by an average of 40%. Overall lead-time is down by almost 43%. On-time delivery has doubled. And the shop-floor has been streamlined. The division uses all eight CMS modules including Bill of Materials, Master Production Scheduling, Inventory and Cost Control. Virtually all of their workforce interfaces with the system every business day. They *know* that CMS is productivity – perfectly packaged.

For more information on how you can access Cullinet through CMS software, call toll-free 1-800-551-4555. Or write to Cullinet Software, Inc. 400 Blue Hill Drive, Westwood, MA 02090-2198.

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Pacbase design tools aimed at PC users

CGI's Pacdesign, Pacbench transfer mainframe CASE abilities to AT-class micros

BY ALAN ALPER
CW STAFF

NEW YORK — CGI Systems, Inc. last week unveiled front-end design facilities that operate on IBM Personal Computer AT-class micros for its mainframe-oriented computer-aided software engineering (CASE) product, Pacbase.

The facilities, marketed under the names Pacdesign workstation and Pacbench workstation, extend the front-end design capabilities of Pacbase that were previously performed on a mainframe.

The tools not only off-load the mainframe of precious processing cycles but offer developers a graphics-oriented environment that is much easier to use, noted Michael Blechar, director of product technology at CGI, the Pearl River, N.Y., subsidiary of CGI-Informatique of France.

"The PC is where the market wants to do design and analysis," he said. "The PC is more user-friendly."

With Pacdesign, developers can plan, design and analyze a proposed systems project by creating graphical representations such as data flow diagrams. Using Microsoft Corp.'s Windows as its user interface, Pacdesign offers color graphics, screen painting, pop-up menus and full windowing.

Any application development methodology can be used with the facility, although Merise — the method for which Pacbase was designed — and Yourdon will be supported in Pacdesign's initial release.

Pacbench, which also uses Windows, provides tools for prototyping, program design, report composition and screen painting. It includes all of the mainframe Pacbase functionality needed for programming, implementation and maintenance, the company said.

Both facilities work interactively with Pacbase's active data dictionary, which resides on the mainframe, the firm said. For example, changes to specifications in Pacbench are sent via a micro-to-mainframe communications facility to the data dictionary where they are updated, indexed and cross-referenced.

The data dictionary then generates complete applications as well as Cobol programs, screen maps, data base descriptions, error messages, on-line Help, user documentation and technical management reports, CGI said.

Pacbase runs on IBM mainframes under DOS, DOS/VSE and MVS as well as on Honeywell Bull, Inc. and Unisys Corp. large-scale systems. It supports most teleprocessing monitors and data base management systems, including IBM's DB2.

> "THE PC is where the market wants to do design and analysis. The PC is more user-friendly."
>
> MICHAEL BLECHAR
> CGI SYSTEMS, INC.

Pacdesign and Pacbench have been beta-tested in Europe for the last five months, Blechar said. The facilities will be marketed beginning next month as part of the next release of Pacbase, which is priced from $200,000 to $450,000, depending on the size of the host.

Pacbase customers can purchase Pacdesign and Pacbench for $3,500 and $640 a copy, respectively. The mainframe-to-micro link ranges in price from $25,000 to $30,000, depending on the size of the mainframe, the firm noted.

Hardware requirements for the facilities include a PC AT or compatible, with 640K bytes of main memory and a 20M-byte hard disk, running Microsoft's MS-DOS 3.1 and a Windows-compatible mouse.

Respects its independence

One Pacbase customer, Irving Trust Co. in New York, said it is looking at front-end design and analysis tools and is considering using the Pacbase PC workstation series. "We have to first decide on a methodology we want to use," noted Edward Lipson, an assistant vice-president and Pacbase team leader at the bank. "The thing we like about the workstation series is that it is methodology-independent."

The introduction of PC-based facilities is part of CGI's overall strategy to bring additional functionality to systems designers who prefer working on micros, Blechar said.

CGI said it will release other PC modules during the next 12 to 18 months, including project management and data normalization facilities. The data normalization module will enable designers to transform existing Cobol applications into structured code, Blechar said, through the use of Pacbase's data dictionary and application generators.

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[†] *Digital News*, December 1, 1986. [‡] Gartner Group currently available research.

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Raymond A. Palkovic
Director
Information Management

GTE Service Corporation

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Macintosh, keeps job.

Until very recently, the above headline was the MIS equivalent of "Man Bites Dog."

Because specifying Macintosh® personal computers for the corporate desktop was an act of sheer daring. Like hang gliding, or wearing a Mohawk.

But now, if the behavior of data processing executives is any indication, we've engineered the thrills out of handing us a purchase order.

Since the introduction of the Macintosh Plus with its 1 to 4 megabytes, and most recently the faster, expandable and MS-DOS compatible SE, hundreds of the *Fortune 500* have put Macintosh to work.

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Would-be ISDN users seek to drive applications

BY ELISABETH HORWITT
CW STAFF

Users tired of waiting for vendors to come up with useful ISDN applications may soon have an organization through which they can make their needs known to major equipment sellers and carriers.

However, organizers of the fledgling organization admit they are finding little inclination among Fortune 500 companies to take control of their own technological destinies.

The purpose of the organization will be to get user input before applications based on the Integrated Services Digital Network (ISDN) standard come out, said W. Edward Hodgson, computer and communications manager for Westinghouse Corp. Once users have defined which ISDN applications they would like to see first, a design group composed of vendor representatives will work on specifications to implement them and to ensure interoperability among different offerings.

Standards committees are usually dominated by vendors, with little or no user participation in the process, Hodgson noted. Vendor representatives who hammer out the specifications are "engineers right out of school who have no user experience," he said, which results in networking standards that are unmarketable. "You're looking for a horse, and you wind up with a two-headed camel."

In order to meet the demands of its customer base, each vendor ends up with a slightly different version of the standard that cannot easily communicate with the other vendors' versions.

Balancing user, vendor input

The group would provide "a central market impetus and carry weight with both users and vendors" so that the process of producing standardized ISDN applications "won't be hung up by people with axes to grind," said Tom Nolle, president of Haddonfield, N.J.-based consulting firm CIMI Corp. A central standards-setting authority, similar to European Postal Telephone and Telegraph authorities, has been lacking in the U.S. since the AT&T divestiture, he said.

Hodgson is working hard to bring user members into the organization but said he is running into some resistance. MIS and communications managers have told him that "they don't have the time, and their companies don't want to spend the money" to be represented in the group, he said. "I tell them that in two to five years, standards will save them a lot of both."

The Association for Data Communications Users and the National Bureau of Standards have both been prime movers in launching the organization. The Corporation for Open Systems has indicated that it will probably become involved, according to Hodgson.

On the vendor side, Digital Equipment Corp. and IBM have verbally committed to the organization. Regional Bell holding company Southwestern Bell Corp. has been a major force in the effort, and Bell Atlantic Corp., Nynex Corp. and Ameritech are also involved.

While Northern Telecom, Inc. has not yet committed to the organization, the company is likely to come out strongly in support of it, an industry source said. "Most vendors feel that the problem with ISDN right now is mostly user perception, so sitting down and talking with users about real applications should help," a Northern Telecom spokesman reportedly told the source.

AT&T's research subsidiary, Bell Laboratories, is reportedly dragging its feet about committing to the group. Several of AT&T's ISDN managers said they had not heard of the effort but that it sounded like something the company would want to support.

The organization was originally planned as a special-interest group within the Open Network Architecture (ONA) Implementors Workshop, an organization set up by the divested Bell operating companies to coordinate the ONA service elements they will submit to the Federal Communications Commission in February. But the operating companies decided the future importance of ISDN warranted setting up a separate organization and bringing in users, Hodgson said.

The group is still in the process of working out the details of user and vendor representation, which should be firmed up during the next three months, according to Southwestern Bell spokesman Bill Motchan.

Right now, users and vendors are struggling with the issue of how to provide the right balance of power in the standards development effort, Hodgson said. "Some of the [regional Bell companies] said that giving users that much control over the applications development process is like letting the fox into the henhouse. They're afraid users will demand things they don't want to supply," he said.

On the other hand, the vendors recognize the value of checking out the market ahead of time if they are going to spend millions of dollars in application development, Hodgson said.

A million retailers a
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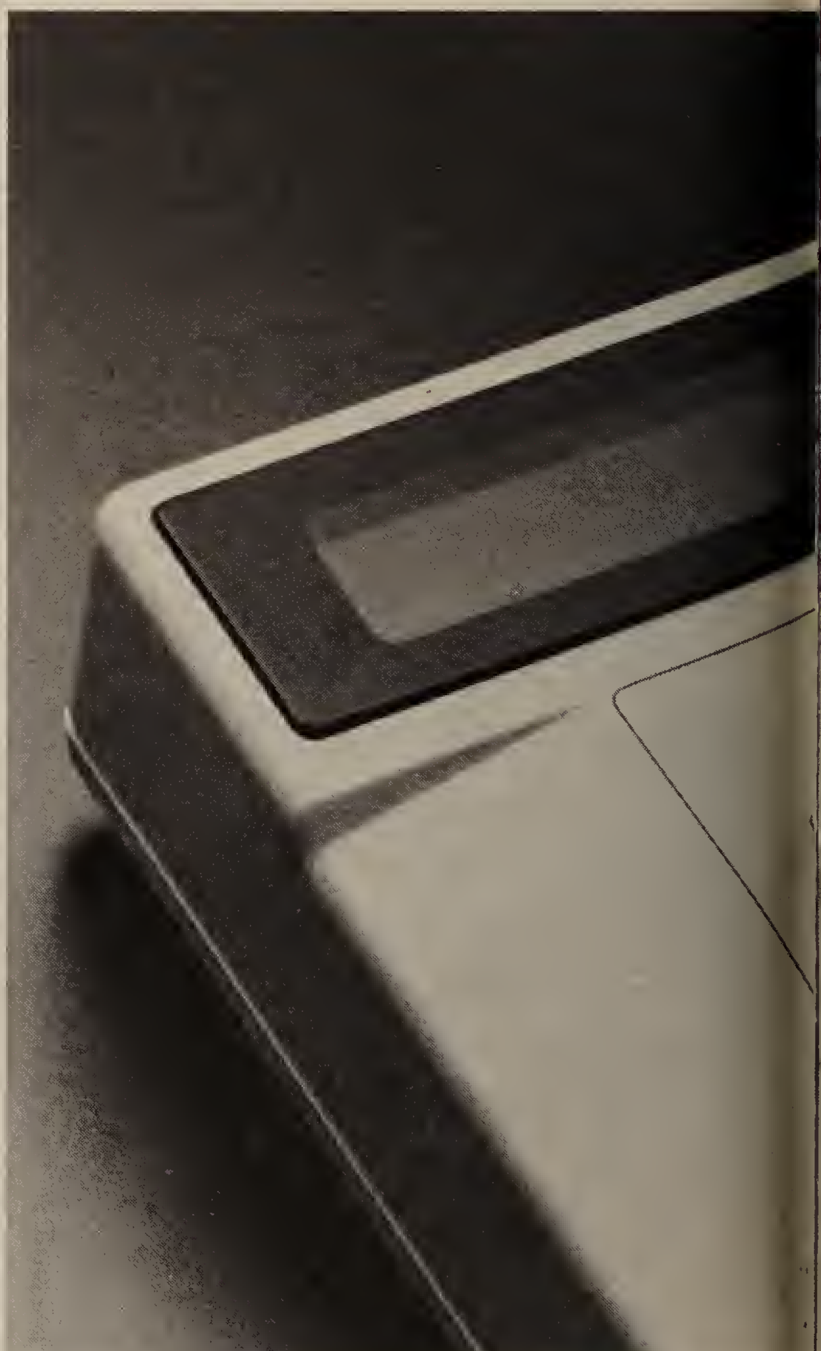

High-speed ISDN service won't show this year

AT&T fails to make deadline for Primary Rate Interface offering; trial version doing fine

BY ELISABETH HORWITT
CW STAFF

BASKING RIDGE, N.J. — AT&T has canceled plans to introduce a high-speed networking service based on ISDN Primary Rate Interface by the end of this year.

Meanwhile, a trial version of the service has been successfully meeting the communications needs of independent AT&T subsidiary American Transtech for almost two months.

The primary rate service supports up to 23 56K or 64K bit/sec. voice or data channels that are consolidated over a 1.5M bit/sec. trunk. AT&T's service will also allow customers to allocate individual channels within the trunk to various AT&T services on a call-by-call basis, the vendor has indicated.

AT&T's new announcement date could be as far off as the second quarter of next year, according to Thomas Nolle, president of Haddonfield, N.J.-based consulting firm CIMI Corp. An AT&T spokeswoman confirmed that the company will not meet a self-imposed deadline for introducing an Integrated Services Digital Network (ISDN) primary rate service by year's end.

No reasons cited

While AT&T confirmed to *Computerworld* in October that the deadline would be met [CW, Oct. 12], that statement was "based on an extrapolation" of the offering's progress up to that date, "and was obviously incorrect," the spokeswoman said. AT&T would not offer reasons for the schedule slippage.

An AT&T official indicated to Nolle that a perceived lack of market demand, possibly coupled with political issues, was responsible for the delay. "He said that if AT&T brought out the service ahead of customer premise equipment support of the primary rate, it would probably fail," Nolle said.

"There is clearly no technological problem," he added, pointing out that American Transtech has successfully tested AT&T's primary rate service in real business conditions for about a month and a half.

The Jacksonville, Fla., company handles financial record keeping for AT&T and also acts as an independent telemarketing service for outside clients. Five AT&T primary rate service lines are currently supplying voice and data communications to approximately 192 telemarketing "positions" (operator stations) within American Transtech.

One advantage of using ISDN instead of ordinary dedicated lines is the service's provision of a dynamic allocation feature. This feature allows operators to request an inbound or outbound line on a call-by-call basis, according to American Transtech Telecommunications Manager Todd Stevenson.

AN AT&T official indicated that a perceived lack of market demand, possibly coupled with political issues, was responsible for the delay.

This saves the company the cost of installing multiple dedicated trunks, as well as the delays associated with obtaining lines through the regular service-order process, "which often takes forever," Stevenson said.

"As a telemarketing firm, delays are crucial to us," he explained.

Individual channels within a primary rate trunk can be routed to a variety of AT&T services, including Switched 56K, Switched 64K, Megacom and Megacom 800. Voice and data transmissions are routed through AT&T System 85 private branch exchanges that incorporate AT&T's R2V4 Primary Rate Interface board.

Future telemarketing services

American Transtech plans to use the primary rate service to support a variety of telemarketing applications.

The first of these applications to be implemented takes incoming 800-number customer calls and matches them to an AT&T 3B2/600 host data base, so that the service representative taking the call automatically sees on his terminal the name of the caller, the program he is interested in and the closest dealer in his area. So far, eight service representatives are using the feature.

American Transtech started out with this "fairly simple" application partly because it does not require customers to have access to the ISDN service, Stevenson said.

When AT&T's primary rate tariff becomes widely deployed, American Transtech will be able to have two-way exchange of data with customers, "without any talking at all," he said.

Overall, the service "is working great," Stevenson said.

re counting on you.
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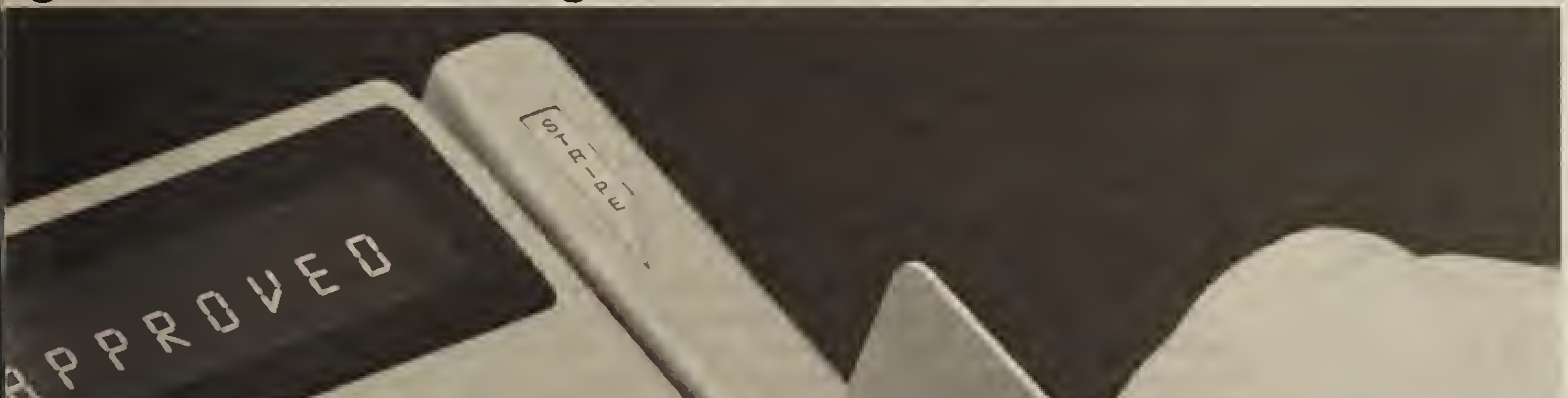

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EDITORIAL

Santa's grab bag

'Tis the week before Christmas, not a head crash in sight, no joy for the weary, with this economic blight.

Santa thought to himself, "Now why not the rest?" as he loaded high-tech goodies to feather our nest:

For poor old John Akers, that graying exec, a financial elixir to soothe aching neck.

I'll make it a point: In the home of 370, user-friendly interfaces shouldn't cost plenty.

At E. F. Hutton, as the winter mists swirl, may Pagemaker resumes quickly unfurl.

On my sleigh through the night, to Seattle I'll wend; I'll offer Bill Gates an investment front end.

At Jim Manzi's in Cambridge, for fairness' sake, I've short-term promises he'll hasten to make.

For the office this year, though try as I might, full automation's still way out of sight.

With Apple Computer, let's try a new tack; large business accounts rest right here in my sack.

Some software I've developed, not forgetting the mainframe, to make the CASE concept live up to its name.

The ray of hope, once again it seems clear, is multivendor connectivity after the new year.

On the networking game, I'll shine with reality, with an honest appraisal of LAN capability.

The elves for AT&T this year worked overtime, but deliver I will the monopoly line.

In the land of the clone, let me not neglect, just one PC standard for all to respect.

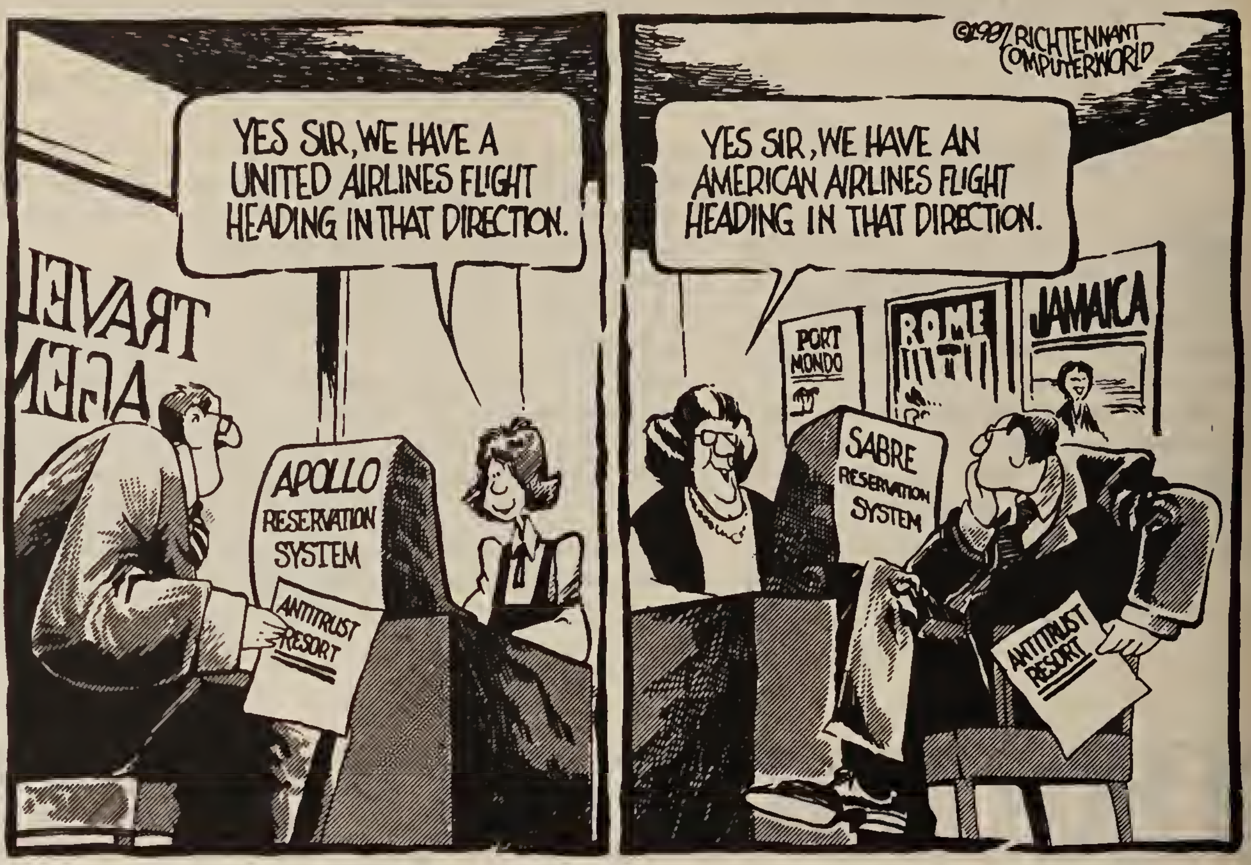
Over technology ahead, the stars they do twinkle; superconductivity adds a new wrinkle.

But where is my MAP? Oh, Ken, it's a pity, DEC has nothing to automate Motor City.

By eliminating that backlog, believe me, it's true. Peace and happiness are finally due.

And lest we forget, the scurrilous publishing trade — a dose of good wisdom, an editor's sharp blade.

With one Ho! and another, Santa spurred reindeer to flight, for the week was too short and his britches too tight.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LETTERS TO THE EDITOR

Holiday cheer

Since the season is upon us (well, almost), I thought *Computerworld* might enjoy reading the following Christmas carol parodies.

To the tune of *I'm Dreaming of a White Christmas:*

I'm dreaming of a clean compile,
Just like the ones I used to know.
When the subroutines run; and errors — not one.
And the total lines always add up right.

I'm dreaming of a clean compile,
With every JCL I submit.
May the link not flush out this time.
And may all your printouts be bright.

To the tune of *God Rest Ye Merry Gentlemen:*

God rest ye merry programmers.
Let nothing you dismay.
Remember those days off this month
To play and play all day.
To forget all of your system development
And project status reports —
O' tidings of debugs and aborts,
Programs and sorts
O' tidings of coding and reports.

To the tune of *O Come, All Ye Faithful:*

O' come all ye coders, operators and voters.
O' come ye; O' come ye to Conference Room B.
Come and be counted, harassed and doubted.
To stay and work would be cheating —
Come to Conference Room B.

I have other parodies, but most are systems- or package-specific. I hope you got at least one chuckle out of the bunch.

Catherine Di Pietro
Timeplex, Inc.
Woodcliff Lake, N.J.

Good investment

I read *Computerworld* regularly and particularly enjoy the In Depth, Executive Report and Management sections. I especially enjoyed Raymond L. Newkirk's column "Humanizing management" [CW, Nov. 16].

While I agree with Newkirk's observation that many information systems and data processing managers who rose from technical positions are found lacking in "people skills," I wish to comment that this tendency is changing, at least based on my personal experience.

In recent years, more organizations have begun to send prospective or new managers and supervisors to special management and supervisor training seminars. These seminars provide at least some training in the human relations aspects of the managerial function.

I have been privileged to attend such seminars in a couple of organizations. While they are not a substitute for more comprehensive training, these seminars are certainly an advancement over the former process of advancing a technical individual into management and then leaving that individual to learn how to manage through the "school of hard knocks."

As the information systems field continues to evolve, many managers are going to find that their jobs contain less need for technical background and expertise and an increasing need for the ability to manage people and understand and be part of the business. While programs such as those I have referred to are a start, it is important that current and prospective information systems managers arm themselves with the tools and knowledge needed to run the information system function as part of a business or a business in itself whose major resource is people.

David Ray Fuller
Information Systems Manager
Northview Corp.
San Diego

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.*

This week in history

Dec. 19, 1977
Esther Peterson, President Carter's special assistant for consumer affairs, says that electronic funds transfer has gained only modest public acceptance thus far because bankers neglected to sample consumer opinion before they began implementing the concept.

Dec. 20, 1982
AT&T discloses its long-awaited plan for divesting the assets of its 22 operating companies in compliance with the settlement of the government's antitrust case against the telephone company.

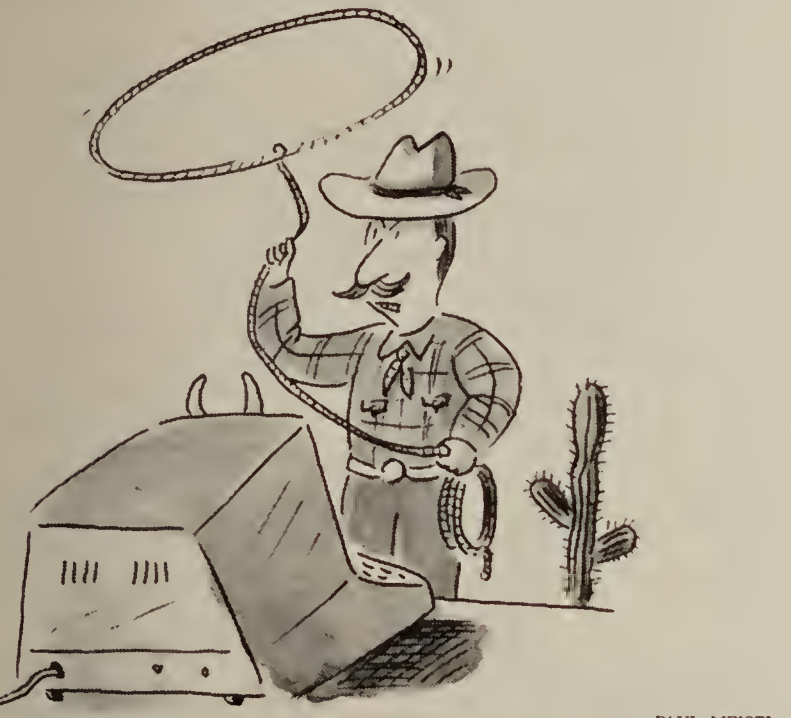
Bang, bang! You're deleted!

Packing a PC, loaded with applications, in showdown with today's reality

ASHLEY GRAYSON

The world used to think of the U.S. as the nation where everyone owned a gun. Today, everyone packs a computer, but the aura is the same. The computer has become the side arm in our confrontation with reality. The vocabulary of computers has adopted much of classic gun jargon such as hardware, caliber, carry-weight, accuracy and dependability.

Personal computers are now qualified not by what they will do for the user but by what applications they will support. The little 8088 pocket PCs are hardly good for more than plinking Basic games; serious users need a 286 to run spreadsheets. Survival depends on being able to outshoot your rival's data.



PAUL MEISEL

Like guns, computers have different calibers, and a user is known by his hardware. The IBM PC is the "service .38" — everybody carries one. Apple Computer, Inc.'s Macintosh, like a 7mm Italian automatic, is elegant and easier to wield but of doubtful "stopping power." Serious workstations fall in line with the .357 Magnum and the Colt .45.

Digital Equipment Corp.'s VAX is reminiscent of the Thompson submachine gun. Professionals have access to one, but virtually no one owns one. Heavy and noisy, the VAX is definitely to be reckoned with.

People talk about the relative merits of the 286 and 386 vs. the 68020, pronounced "oh-twenty," in much the same way hunters argue about the best load for the .224 hollow point.

Environmental support

At the highest end are the developer's machines. These babies no longer run compilers, they "support environments" in which new applications are created. The .44 Magnum of serious workstations is the "technical workstation," which conjures up images of an awesome programming environment in a constant state of self-assembly.

To serve the computer user's need for fantasy comes the most exciting computing device since Pong: Rosy Fingered Dawn Corp.'s (RFD) Technical Playstation-1.This is the latest in the solar family of workstation companies — Sun, Apollo, Cadmus (remember Cadmus?), and don't forget solar Plexus. A piece for the boys who must play with the biggest toys, the TP-1 is a Marlboro Man's computer; you want to wear a plaid flannel shirt when you use it.

In keeping with this new image of computing, the TP-1 is programmed in Ida, the block-structured language from Leggo Soft, Inc. Ida meets all of the Department of Defense's requirements for impenetrability of documentation and is rated as CASE-hardened. Independent tests show Ida to be as sweet as Apple's Cider-Press, the desktop package for squeezing solutions out of Macintoshes.

The operating system runs under Unix because nothing has been found that is better-suited for the folks who'd rather play with computers. Unix, like the jungle gym and the sandbox it replaces, lets programmers develop in safety while the rest of us muse about what they are really doing out there.

Three programming and user environments can run simultaneously. The first is MS-DODS [Military System — Department of Defense, Specific]. Since many workstations are used in defense projects, this command (and control) interface has been designed to execute all commands from a superior process without question.

Output is controlled by a "what-you-see-is-what-you-need-to-know" window manager that pipes controversial material to the bit shredder. The ON button is a small icon of the famous lieutenant colonel of the same initials.

The second environment is for serious programmers. Because it could not be completed on time and never went through a question-and-answer process, it is described as the "developer's tool kit." This label allows the vendor to pass on the really tough problems to the user community to solve.

Since real programmers never ask for Help, there is none. A large and tedious tutorial system is provided, however. Developed as Hypotext, it encourages independent study. System and error messages are handled like dialogue in dungeon-and-dragon adventure games. For example:

System: "Underflow."

User: "Hit the underflow with the debugger."

System: "Missed."

User: "Set a trap."

The system then replies with a list of Hex addresses. If the user has picked up the memory map, he can locate the problem.

The "simple as 1-2-3" user interface will be shipped any time now. It is rumored to be based on an Italian version of Forth called Quattro.

Tools for the job?

The TP-1 comes loaded with nifty applications software. There are the old classics that print memory dumps in Roman numerals and pinup girls on the printer. (A 24-pin printer is recommended for best resolution). Free Base II is included for those with chemical dependencies.

Utilities include Peepshow, for looking in other people's windows, and Skylight for converting from Top View. Data is input with a light crayon that can be adjusted for 16,000 colors, although they never stay inside the lines. Most power users will probably opt for the Rat, RFD's power-mouse.

Because even tough computer users have a mother who loves them, the Technical Playstation-1 includes a sweater to keep the user from getting chilled sitting in front of all those open windows.

Grayson is the founder of ADG, a San Pedro, Calif.-based organization that develops sales tools and programs for high-technology companies. Having spent 11 years marketing large systems for Digital Equipment Corp., he now works extensively with IBM-compatible micros.

R-e-s-p-e-c-t, find out what it means to EDP

READER'S PLATFORM

ROBERT HARGROVE

A letter to the editor [CW, Nov. 23] as to why there aren't more articles on electronic data processing auditing touched on the key point — auditors don't get much respect.

This lack of recognition surely is not because auditors aren't needed. Anyone who has been in this business for more than 30 minutes can remember application systems being run from programmers' drawers or from their terminals. All of us have fallen victim to the quick-and-dirty procedures, characterized by individuals who could catalog and uncatalog, zap, rep, iebr14 and gener a problem away without a scrap of documentation or a trace of an audit trail.

Perhaps one reason that EDP auditors don't top the corporate hero list is that it is simply not human nature to praise those necessary yet cheerless actions that are good for us.

Bad attitudes

And there are cultural differences between EDP auditors and those they audit. One of these is the denigration, on the part of MIS, of the auditor's technical skills. The line goes, "If they were any good, they'd be programmers."

This attitude expresses the thought that the goal of anyone with technical expertise must be to join our profession. Overlooked is the notion that one may actually enjoy being an auditor or an accountant.

A similar argument used to be made about putting programming tools in the hands of end users — if they were so technically proficient, why weren't they programmers?

Another reason for the coolness toward auditors may lie with the way we in MIS see ourselves in contrast to them. We are, we are told, agents of change, employed in an industry in a hurry, so survival means awareness of industry direction and end-user needs tomorrow, not time spent documenting the past.

The auditor is often seen as an impediment as he labors to ensure that MIS keeps its standards and procedures correct and up-to-date, a Herculean task since most documentation is out of date by the time it is published.

MIS often sees this relationship as adversarial, the quill pen vs. the laser printer, 19th-century ideas trying to manage 21st-century technology.

Many data processing people, while establishing a close friendship with the computer, have only a passing acquaintance with writing things down. Cobol, Fortran or JCL is their first language, with English often coming in a distant second.

A shrug and a smirk

There are few things more galling than to ask where some documentation is, only to have the respondent point to his head. This answer is usually followed by your asking, "What would happen if you were hit by a Mack truck?" — which is in turn followed by a shrug and a smirk. It's enough to make one want to rent a Mack truck.

MANY DATA processing people, while establishing a close friendship with the computer, have only a passing acquaintance with writing things down. Cobol, Fortran or JCL is their first language, with English often coming in a distant second.

With all of these reasons in mind, however, the fact exists that we need auditors today as we have never needed them before. As computing power becomes decentralized in organizations, the use of computer resources and new systems becomes harder to control or even to determine.

Microcomputers, telecommunications and compatibility issues make the need for standards and clear, adhered-to procedures more important than ever. For these are not merely exercises in documenting the past but steps to insuring the future. Standards are the engine that runs the business and, when followed, are one of the hallmarks of good management.

Perhaps our friends in auditing should spend a little bit of their time marketing themselves, portraying themselves as advocates in seeking solutions to today's rapidly changing high-tech challenges.

Although it is a cliche, it is as true today as ever that if a system can't be audited, it can't be managed.

Hargrove is security and contingency planner at the University of Texas's Health Science Center at Houston.

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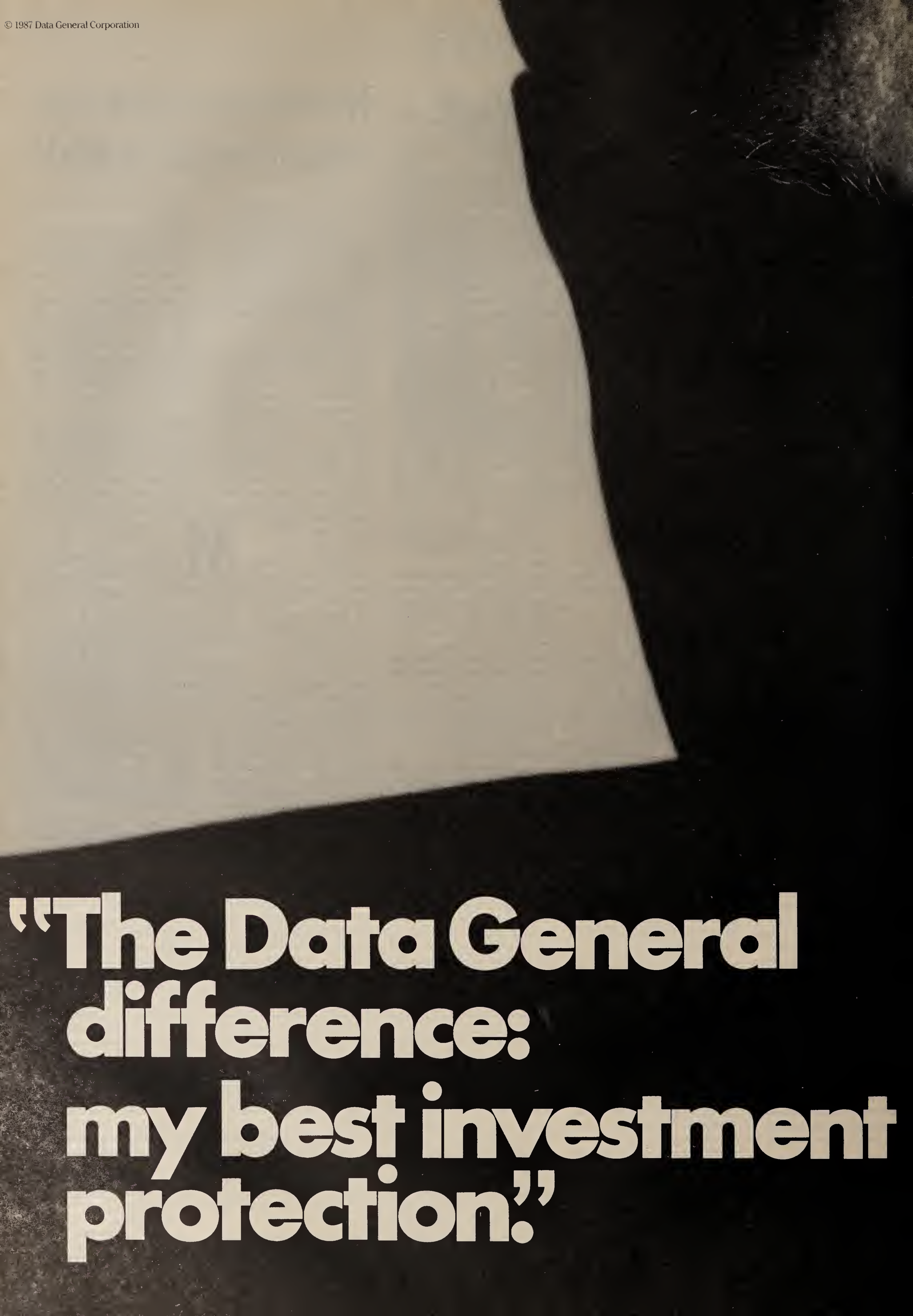
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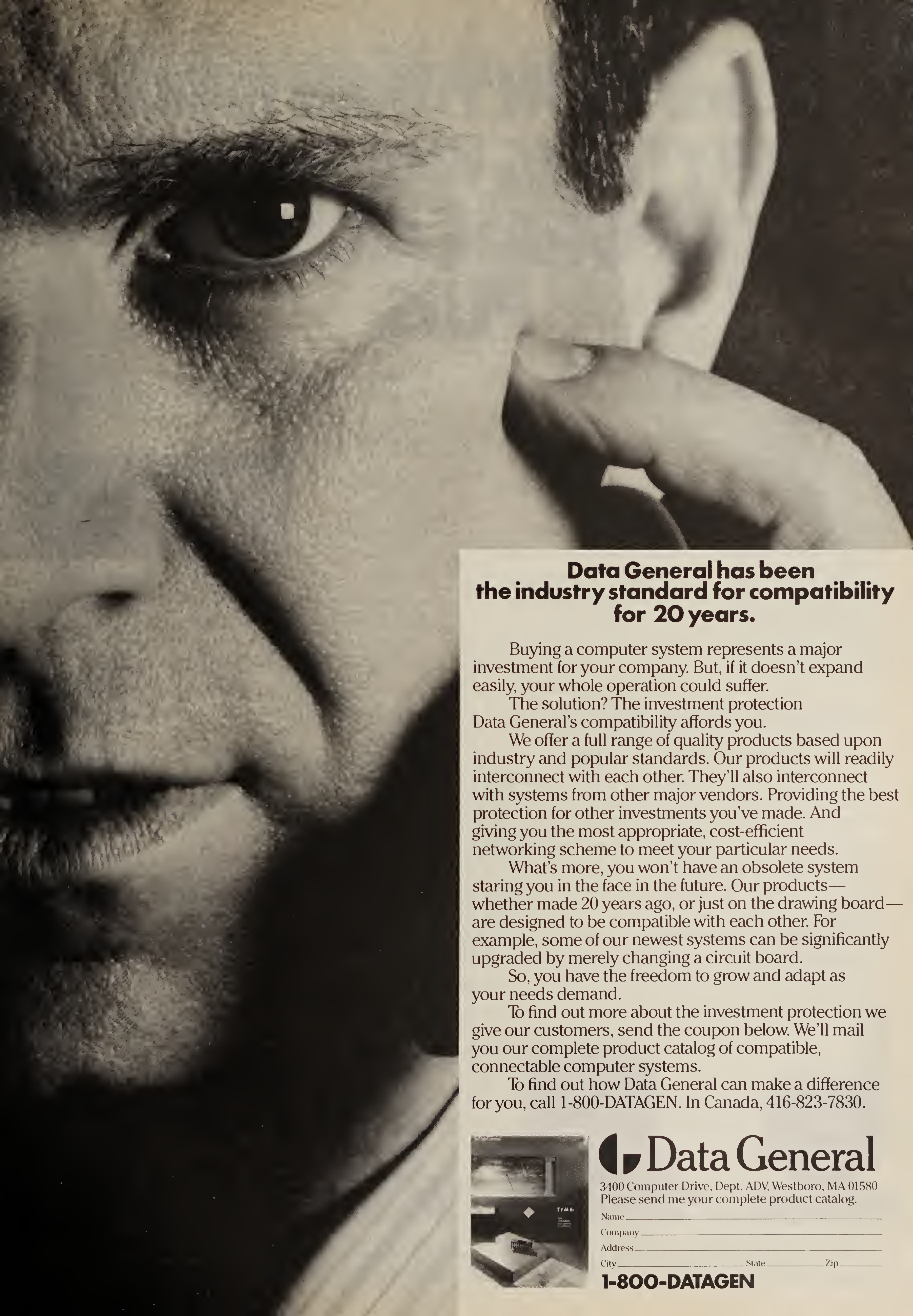

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SOFTWARE & SERVICES

SOFT TALK

George Schussel

SQL, not DB2, sets standard

Several dramatic changes have occurred in the mainframe data base management system market during the last two years:

- The American National Standards Institute has adopted SQL, the data language used in IBM's DB2, as a standard.
- IBM's relational DBMSs, DB2 and SQL/DS, both of which are based on SQL, have had impressive sales.
- The leading independent mainframe DBMS vendors, ADR, Cincom, Cullinet and Software AG, have had flat DBMS sales and significantly lower profits.
- A number of important mainframe DBMS software vendors have announced that they will be supporting SQL.

Some industry observers have concluded that the SQL-based DB2 and SQL/DS have emerged as new standards and that independent software vendors are going to have to stop marketing competitive DBMS software.

If, in fact, IBM takes over the market for mainframe DBMS software, the result would be very bad for users. The issue here is the difference between monopolistic and competitive markets. From a user perspective, price, function and service are far superior in a competitive market.

With slow growth in main-

Continued on page 24

DB2, SQL/DS differences underscored

BY CHARLES BABCOCK
CW STAFF

WHITE PLAINS, N.Y. — If you think two relational data bases from one vendor that both use SQL should be very similar, consider the differences between IBM's DB2 and SQL/DS.

DB2 was designed for use with MVS/XA; SQL/DS was designed for use under VM/CMS or DOS/VSE, but their differences scarcely end there, said Thomas E. Howard, principal consultant with Atre International Consultants, Inc. in Rye, N.Y.

For one thing, DB2 is about twice as fast as SQL/DS, Howard told attendees at a one-day conference intended to inform users how to use DB2 and SQL effectively.

Shaku Atre, an ex-IBMer and founder of Atre International, noted that DB2 is rapidly growing into a large, complex product, with 700,000 lines of code after three releases, compared with one million lines of code after 17 releases for its aging predecessor, the IMS file-management system.

Howard did not offer an estimate on the number of lines of code in SQL/DS but made it clear that DB2 is more complicated to install and operate. DB2 has more parameters to initialize and requires a Master Terminal Operator to maintain constant monitoring and support. SQL/DS does not require the Master Terminal Operator.

DB2 has a performance monitor, while none is available yet

Continued on page 24

ANSI, Feds address DBMS security

Groups to study commercial, government concerns of neglected area

BY MITCH BETTS
CW STAFF

Two standards organizations, the American National Standards Institute's (ANSI) X3 committee and the federal government's National Computer Security Center (NCSC), have established separate programs in order to address one of the most neglected areas of computer security — data base management systems.

"Data bases are very user-friendly, and they provide a lot of information, but they're also a security nightmare," said Carl B. Jackson, computer security specialist at Ford Aerospace & Communications Corp. in Newport Beach, Calif.

Jackson welcomed the standards-setting efforts, hoping they will prod DBMS vendors into providing better access controls. "They have been neglected — just look at IBM's DB2," Jackson said, referring to major gaps in that product's security [CW, Sept. 28].

The ANSI X3 committee's Data Base Systems Study Group recently formed a task group to report on security and privacy issues, according to Susan Albert, chairman of the new study group and a security manager at GTE Government Systems Corp. in Rockville, Md.

"Nowhere has the lack of security been so exposed as in the data base arena," Albert said.

She said the task group will

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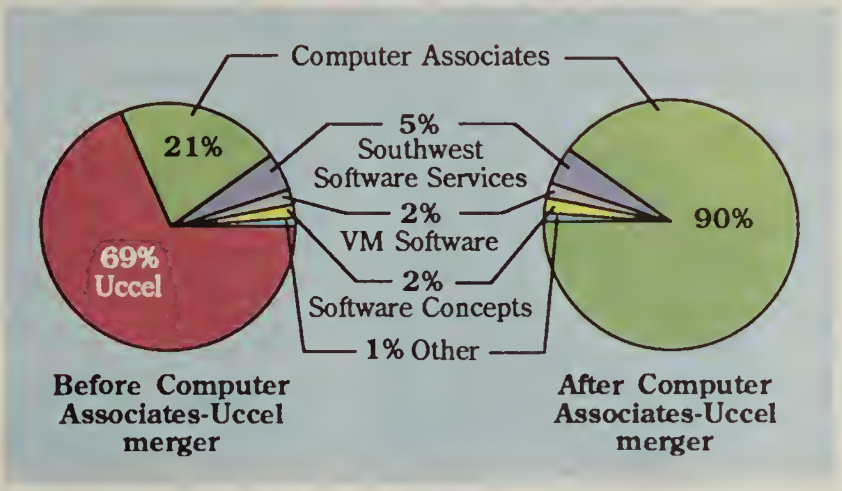
- Air Force tries to make single-image data dictionary fly. Page 24.
- RM/COS Version 2.8 ported to CIE Systems supermicros. Page 28.

Data View

Market share of job scheduling software
IBM and plug-compatible mainframes



INFORMATION PROVIDED BY COMPUTER INTELLIGENCE

VM Software division ships report writer for SQL/DS

RESTON, Va. — Applied Relational Technology, a recently formed division of VM Software, Inc., last week began shipping a report writer for the IBM SQL/DS relational data base management system.

VMSQL/Report can be used to produce reports such as invoices, mailing labels and form letters as well as the customary tabular reports, the firm said.

The software allows programmers to use both procedural and nonprocedural commands to build reports. Its interpretive language provides control over the report's format, headings, and page breaks.

Applied Relational Technology was established earlier this year to provide products to VM shops using IBM's SQL DBMS. The division marks VM Software's first effort outside the VM operating system field. The SQL report writer carries a permanent license fee of $12,000. Customers can opt for a three-year license for $8,000.

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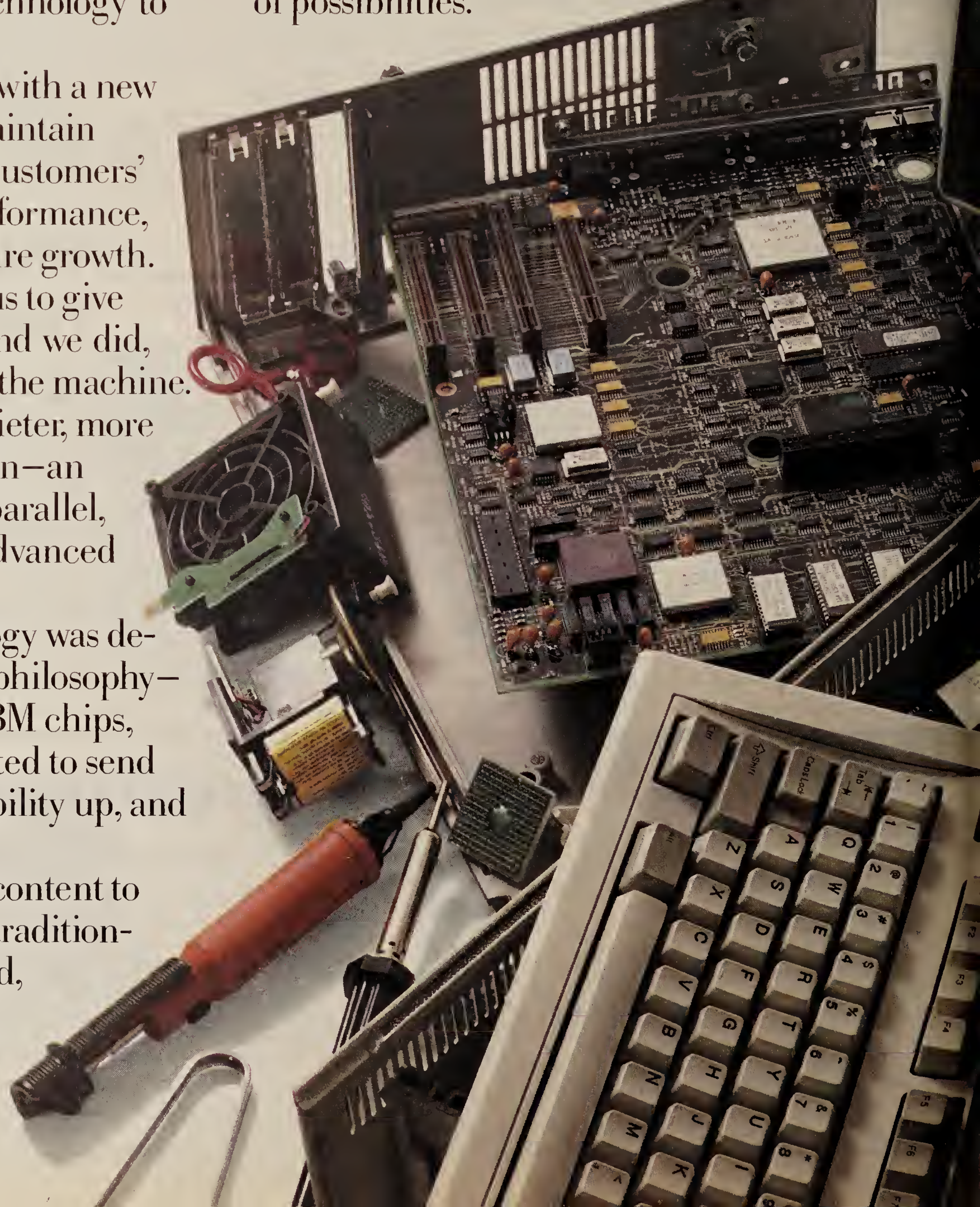
For instance, you wanted us to give you more standard features, and we did, but not by plugging cards into the machine. Instead, we came up with a quieter, more reliable, more compact solution—an integrated planar board with parallel, serial and mouse ports, even advanced graphics, built in.

In fact, the entire technology was developed from a "total system" philosophy—using IBM components, and IBM chips, specially designed and integrated to send overall performance and reliability up, and costs down.

We could even have been content to direct information through a traditional "single bus" highway. Instead, we created a superhighway called Micro Channel architecture in Models 50, 60 and 80, a much more efficient method of sending and receiving information.

We also introduced a new version of DOS which taps into the power of the new systems and runs current software better. And we just unveiled a new operating system, OS/2, that opens up a world of possibilities.



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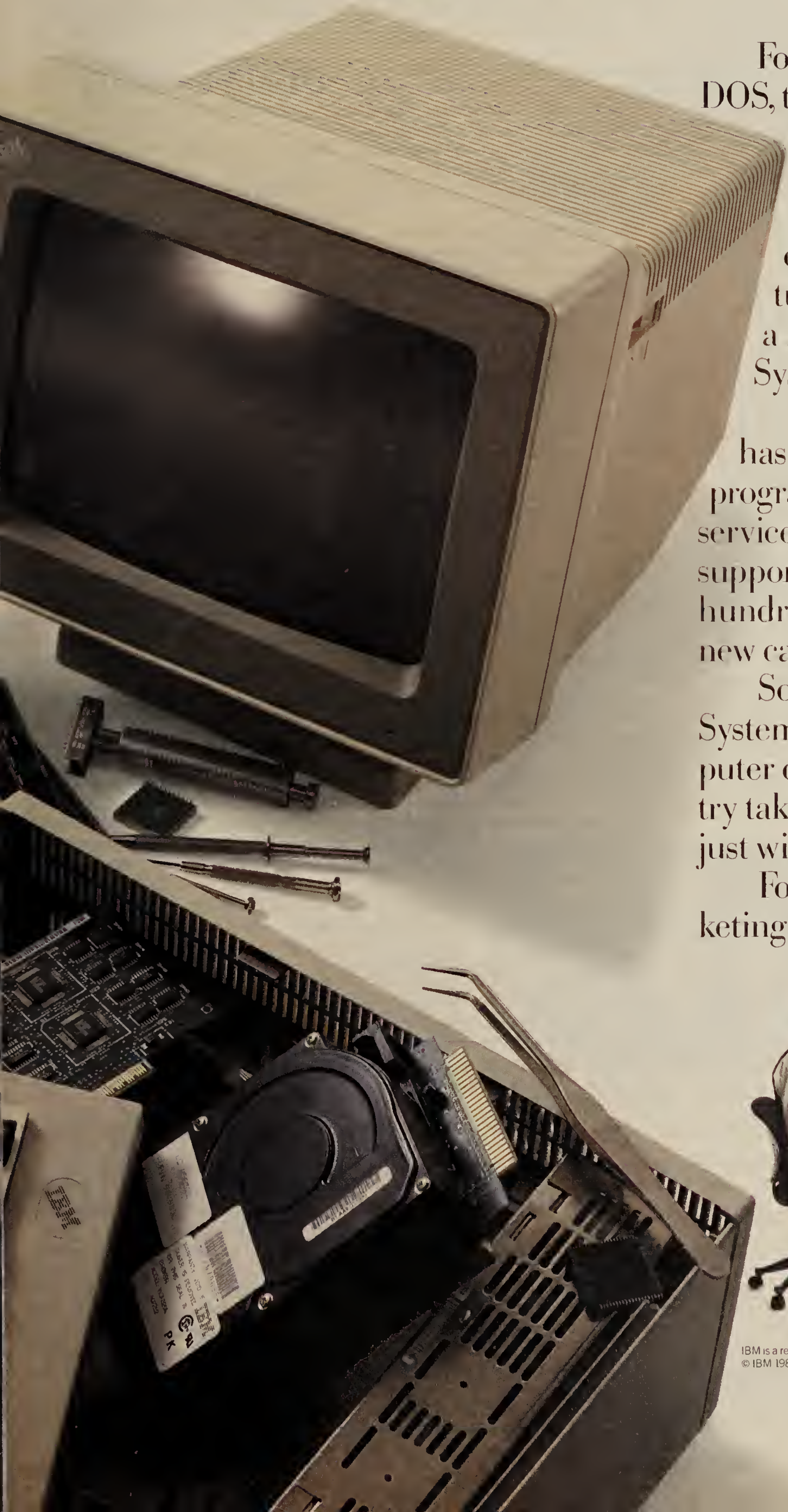

For starters, it's compatible with today's DOS, to protect your investment in hardware and software. It works beautifully with Micro Channel, to make multitasking easier. What's more, OS/2 establishes a consistent look for virtually all software and systems, part of a blueprint for the future we call Systems Application Architecture.

Even IBM's legendary dealer network has been improved. A special certification program gives dealers advanced training, so service and support are even stronger. In fact, support comes from many sources—right now, hundreds of outside developers are creating new cards, software and peripherals.

So you see, the world of the Personal System/2 is far greater than any single computer or chip or component. And when you try taking apart a system like this, you can just wind up with lots of bits and pieces.

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Air Force tries to pin wings on IISS project

TORONTO — Netron, Inc. has released an IBM MVS/TSO version of its software engineering system that is used for the development of Cobol programs.

Netron has offered its Computer Automated Programming (CAP) Development Center on Wang Laboratories, Inc. VS hardware, Digital Equipment Corp. VAX systems and the IBM Personal Computer platform.

The latest release reportedly can be used for applications that will be running under CICS in the MVS/TSO environment.

Uses reusable code

Like the previous versions, the IBM MVS version of Netron/CAP relies on reusable code. The code modules are stored and then called for speedier construction of a program, according to the company.

Netron's technique is called Bassett Frame Technology, which was created by the company's vice-president of research, Paul Bassett. The technique allows for the automated reuse of commonly used or generic code, which the company calls "frames" of Cobol.

Netron/CAP Development Center includes a format for calling modules and linking them together in a heirarchical order, the company added.

According to the vendor, the product can be used during the design, prototyping, development and maintenance phases of a Cobol system.

The MVS version is available now and can be licensed on a per-terminal basis. For example, a five-terminal license costs $16,000 per user, and an 80-terminal license costs $3,250 per user.

Focus gets upgrade, adds VAX and Sybase links

NEW YORK — Information Builders, Inc. recently added two interfaces to its Focus fourth-generation language environment and introduced an upgraded version of Focus for Digital Equipment Corp. platforms.

The new interfaces will link Focus to DEC's VAX data base management system and Sybase, Inc.'s relational DBMS. The links require the latest release, Focus 5.2. Information Builders already offers interfaces to DEC's Rdb relational DBMS and RMS file-management system as well as to Oracle Corp.'s relational DBMS.

Focus Release 5.2 is the third major upgrade to the VAX version of Focus in two years. As is the case with other Information Builders interfaces, the VAX DBMS interface enables Focus users to rely on Focus reporting, graphics and data analysis capabilities in the VAX DBMS environment. It will also let users join data from the VAX DBMS environment with data from other DBMSs running on the VAX platform, such as Rdb, RMS or Oracle, the vendor said.

The Sybase interface provides similar capabilities for the newer Sybase relational DBMS, which was designed for transaction processing environments.

The two interfaces and Focus Release 5.2 are currently shipping. The VAX DBMS link ranges in price from $1,750 for a DEC Microvax II license to $8,500 for a VAX 8800 license. The Sybase interface costs from $1,750 to $8,500.

Focus Release 5.2 carries a license fee that ranges from $6,800 for a Microvax II to $155,700 for a VAX 8978.

Schussel

CONTINUED FROM PAGE 21

frames, uncompetitive hardware in minicomputers and aggressive competition in micros, IBM faces severe problems in the hardware side of its business. For some time now, IBM's highest growth and largest profit margins have been achieved in software. IBM projections expect this trend to accelerate. If IBM achieves dominance in DBMS software, the long-term implications for users must be considered. Let's see if we can draw any analogies from experience with IBM's teleprocessing monitor and the IBM Personal Computer.

IBM's primary transaction processing monitor is CICS. In the 1970s, there were several actively marketed and successful alternative transaction processing monitors to CICS. At that time, I was a vice-president at a large New England insurance company. We were using Cullinet's IDMS DBMS and acquired Altergo's Shadow II to provide services for on-line access to the data base.

Shadow II was successfully used at the company until 1980, when a large application package, Policy Management Systems (PMS), was acquired. PMS used CICS. It seemed more reasonable to run one rather than two separate transaction processing monitors and, therefore, we converted our existing applications from Shadow II to CICS. The level of services provided by CICS was not superior, and its ease of use was significantly worse. Our conclusion was that the only advantage acquired from using CICS was that it was a standard.

The independent transaction processing monitor market no longer exists. CICS dominates this marketplace, and the lack of reasonable alternatives makes users poorer.

IBM's dominance with the PC standard in the commercial marketplace has been just as total as the CICS takeover was. The result for the user, however, is significantly different. The advent of IBM's PC had a powerful influence on the marketplace. From 1980 to 1982, there was much confusion with many different vendors and standards. Rapid user acceptance of the PC and Microsoft's MS-DOS products meant a de facto standard was created. Along the way, some good PC companies fell by the wayside.

A new breed of competitors emerged. Some adopted the IBM standard and began to sell products that gave the functionality of IBM's PC at cheaper prices. In other cases, the IBM PC was not only cloned but also improved. IBM began to lose significant market share to vendors offering better price/performance or better products.

IBM's response has been the Personal System/2. PS/2s will be cloned, and the competitive battle will continue. The user is the great beneficiary of this competition. What permits this competition is the fact that the true standard isn't the IBM PC but rather the environment provided by Microsoft's operating systems, MS-DOS and OS/2.

The improvement of products and services requires competition. The usefulness of products and services is significantly increased by standards. The best answer for the DBMS marketplace is to standardize on the public-domain language SQL, not on the proprietary products DB2 and SQL/DS.

The wise shop that is looking for a set of application development tools will evaluate a complete product set, which includes data dictionaries, fourth-generation languages and computer-aided software engineering tools as well as a DBMS. Make sure your vendor is committed to full support for SQL. An SQL standard for data language protocol and an actively competitive marketplace offer the best promise for users.

Schussel is president of Digital Consulting, Inc. in Andover, Mass., and chairman of the National Database and Fourth/Fifth Generation Language Symposium.

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DBMS security

CONTINUED FROM PAGE 21

study DBMS security issues in both the commercial and government sectors and produce a background document to guide the ANSI X3 standards committee.

Farther along is the NCSC at Fort Meade, Md., which has begun writing a government security rating system for DBMS software and data base machines. The NCSC expects to publicly release a draft in mid-1988 and a final version in early 1989, according to project manager Michael W. Hale. The NCSC is run by the U.S. Department of Defense to help vendors incorporate advanced, multilevel security features in their products. In the past, it has focused on operating systems for mainframes and minicomputers, resulting in the Trusted Computer System Evaluation Criteria.

That document, known as the Orange Book, establishes a rating system for evaluating and certifying products being developed by vendors. At the recent National Computer Security Conference in Baltimore, NCSC officials said they now want to extend their work into applications areas, including DBMS.

Hale said the DBMS standard, called the Trusted DBMS Interpretation, is needed even if the host's operating system is highly secure, because DBMS software often bypasses the security features of the operating system.

"In addition, DBMS [products] typically provide the capability to share objects that are of a more abstract type than operating systems are capable of recognizing" and protecting, Hale said at the Baltimore conference. The standard "will require that the system be evaluated in the context of the supporting operating system and hardware base," he said.

DB2, SQL/DS

CONTINUED FROM PAGE 21

with SQL/DS. DB2 has more tools and utilities available and has more levels of security and control than SQL/DS. The data base administrator under DB2 can grant access to certain records to users at certain levels in the organization.

SQL/DS, however, can lock records at the row level, a more sharply defined locking mechanism than DB2, which locks records at the level of a 4K-byte page, Howard said. Page-locking can be limited by designating fractions of a page to be locked, but the net effect is to tie up more records than the one being accessed, which can lead to contention on a system with many users, he said.

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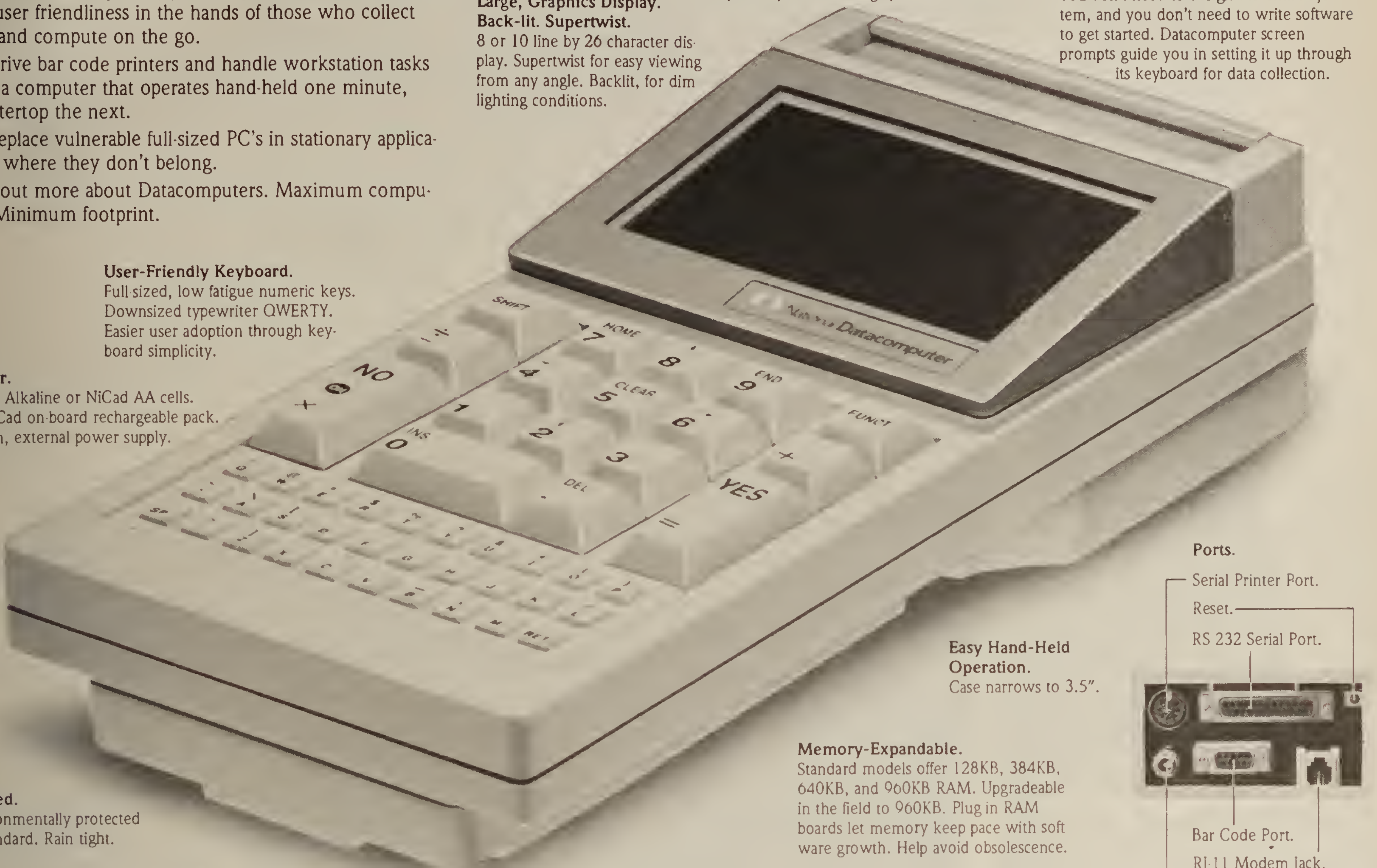

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NEW PRODUCTS

Systems software

Version 2.8 of Austec, Inc.'s **RM/COS** operating system has been ported to **CIE Systems, Inc.'s** family of Motorola, Inc. 68020-based supermicrocomputers.

According to the vendor, with RM/COS as the operating system, the CIES 680 series can support up to 99 users. Features of RM/COS Version 2.8 include support for the small computer systems interface, allowing multiple CIES 680 systems to share common disk-based data, and support for such hardware options as a 16-port intelligent communications board, 4M- and 8M-byte memory boards and a remote terminal subsystem product.

Prices for the CIES 680 systems range from $12,750 to $125,995, including RM/COS.

CIE Systems, 2515 McCabe Way, Irvine, Calif. 92714. 714-660-1800.

Utilities

An on-line VSAM tuning product called **VSAMview** has been announced by **Design Strategy Corp.**

Using catalog and user-supplied information, VSAMview selects optimal parameters for clusters to improve performance and reduce space utilization. It creates jobs that can be submitted immediately or saved for later use and lists all clusters in a selected catalog.

VSAMview is priced at $6,000.

Design Strategy, 330 Madison Ave., New York, N.Y. 10017. 212-370-0392.

TSSO Version 4, Release 4, an MVS-based subsystem said to provide the building blocks for operations automation in an IBM MVS environment, has been announced by **Bell Communications Research Corp.** (Bellcore).

Features include the ability to look at console messages and take actions and to build security into MVS control functions. It also has a programmable operator that can issue commands and retrieve responses in standard time-sharing option Clists.

TSSO Version 4, Release 4 is priced at $6,500 for a single CPU and $25,000 for a corporate license.

Bellcore Licensing, 290 W. Mount Pleasant Ave., Livingston, N.J. 07039. 800-521-2673.

Applications packages

Harris Corp.'s Data Communications Division has announced that Wordperfect Corp.'s **Wordperfect 4.2** is available for the 9300 network communications system.

Wordperfect 4.2 for the 9300 is available in both local-area network and single-user versions. Using the Text Import feature, Wordperfect can read ASCII, DCA, DIA, DIF, RTF and Micropro International, Inc.'s Wordstar file formats. It also sports Harris laser, letter-quality and dot matrix printers.

The LAN version includes licensing for one station. It costs $695. Each additional node costs $150.

Harris, 16001 Dallas Pkwy., Dallas, Texas, 75248. 214-386-2000.

Languages

Ana-Systems has announced a version of the Modula-2 language system for the Convergent Technologies, Inc. family of Unix-based computers.

Modula-2/68, a version of the Modula-2 programming language derived from Pascal, allows program modules to be compiled separately, the vendor said.

An executable process can be built by linking with previously compiled program modules or by linking with library procedures written in C.

The Convergent Technologies-based Modula-2/68 product costs $1,200.

Ana-Systems, P.O. Box 4759, 697 Saturn Court, Foster City, Calif. 94404. 415-341-1768.

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Computer costs aren't the only savings that will show up on your company's books. Your paper costs will be significantly cut. Instead of printing and stocking letterhead, price lists, preprinted forms and catalogs, Xerox Electronic Printing Systems can turn them out on demand from a blank sheet of ordinary paper. And with our MICR option, you'll save money on printing and processing any negotiable document.

Xerox intelligent printers not only have the facility to do more than ordinary printers; we have a printing system for every kind of facility. To handle the strenuous demands of big centralized data centers, there's a

Univax-Linker, a communications terminal emulation package said to link users of Digital Equipment Corp. VAXs to Unisys Corp. host computers, has been announced by **Bekeen Computer Corp.**

According to the vendor, Univax-Linker is a VAX-based software product that allows users on any VAX/VMS computer system to have full access to a Unisys computer system. Any terminal on the VAX can become a full-function UTS20, UTS30, UTS400 or STV1120 terminal and interactively access the Unisys system.

A single-user license for Univax-Linker costs about $18,000.

Bekeen Computer, Suite 15, 12 Falconer Drive, Mississauga, Ont., Canada L5N 3L9. 416-826-7780.

Natural Language, Inc. has ported its **NLI Datatalker** to the IBM RT Personal Computer.

The NLI Datatalker is a natural language interface that allows users to access corporate data from relational data bases in English. It translates English into SQL statements, retrieves data and presents data in English. According to the vendor, the NLI Datatalker supports all SQL-based relational data bases running on the RT PC, including IBM's SQL/RT.

The NLI Datatalker is available for RT PCs with a minimum of 8M bytes of memory running under the AIX operating system. Its price starts at $10,000 per system.

Natural Language, 1786 Fifth St., Berkeley, Calif. 94710. 415-841-3500.

Apprentice, software said to automatically generate integrated data dictionaries for any existing Honeywell Bull, Inc. application using IDS II data bases, has been announced by **Sourcerer Software, Inc.**

Apprentice builds fully integrated data dictionaries including schemas, realms, records, sets and elements. It also automatically populates the data dictionary and relates data definitions to application programs and copy-library routines.

A built-in interactive query language allows the user to view data for impact analysis on-line. A batch reporting capability is available for off-line reporting.

Apprentice costs $7,500.

Sourcerer Software, Suite B, 8920 N. 23rd Ave., Phoenix, Ariz. 85021. 602-870-9497.

Compuserve Data Technologies has released a **System 1022-to-System 1032** conversion package.

The package was designed to convert System 1022 data bases and applications from Digital Equipment Corp. Decsystem mainframes to System 1032 fourth-generation language data base management systems running on the DEC VAX. It consists of a data set converter, a program converter and training.

The software package is priced at $30,000.

Compuserve Data Technologies, 1000 Massachusetts Ave., Cambridge, Mass. 02138. 617-661-9440.

Topnotch, a desktop productivity tool for IBM mainframes, has been announced by **Trax Softworks, Inc.**

Topnotch includes a spreadsheet, an appointment calendar, an index card file, a notepad and a toolbox for printing and transferring data displayed on the screen. The utilities run in the background while other features are being used.

Prices range from $8,000 to $15,000, depending on CPU size.

Trax Softworks, 10801 National Blvd., Los Angeles, Calif. 90064. 213-475-8729.

Services

Bell Communications Research Corp. (Bellcore) has announced **Taskmate**, a package that was designed to automate the work flow in any synchronous system.

Taskmate is said to allow users to command up to four mainframe host sessions simultaneously or use a personal computer to develop and run customized programs. Users can develop their own PC-based screen interfaces.

Taskmate's price starts at $495.

Bellcore, 290 W. Mount Pleasant Ave., Livingston, N.J. 07039. 800-521-2673.

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   - 85. Communications Systems/Public Utilities/Transportation
   - 70. Mining/Construction/Petroleum/Refining/Agric
   - 80. Manufacturer of Computers Computer-Related Systems or Peripherals
   - 85. Computer & DP Services including Software/Service Bureau/Time Sharing/Consulting
   - 90. Computer/Peripheral Dealer/Distributor/Retailer
   - 75. User Other ____________
   - 95. Vendor Other ____________

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   - 22. Dir Mgr Suprv. of Operations Planning Adm Services
   - 23. Dir. Mgr. Suprv Analyst. of Systems
   - 31. Dir Mgr. Suprv of Programming
   - 32. Programmer Methods Analyst
   - 35. Dir Mgr Suprv OA/WP
   - 38. Data Comm Network/Systems Mgt

   OTHER COMPANY MANAGEMENT
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   - 12. Vice President/Asst VP
   - 13. Treasurer, Controller, Financial Officer
   - 41. Engineering, Scientific, R&D Tech Mgt
   - 51. Sales/Mktg Mgt

   OTHER PROFESSIONALS
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   - 70. Medical Legal Accounting Mgt
   - 80. Educators Journalists Librarians. Students
   - 90. Others ____________

   (Please specify)

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Ed Scannell

It pays to buy direct

Taking some off the top. Corporations get an average volume discount of 33.8% on software purchased direct from vendors, according to a survey of 300 companies conducted by "The Soft-Letter," a biweekly newsletter based in Cambridge, Mass. The survey showed that among volume purchasers, colleges and universities get the highest discounts — 37.6% — and government agencies come in second at 34.6%. In another finding, mail-order houses and catalogs received the largest average reseller discounts at 42.2% and 42.3%, respectively.

VGA in 30 days. Award Software, the folks that produce ROM BIOS products for Far East IBM Personal Computer compatible makers, has teamed up with Cirrus Logic to produce a kit that allows manufacturers to bring an IBM Video Graphics Array-compatible board to market in 30 days. The kit, which should save developers four months in development time and $20,000 to $30,000, includes a working production board, schematics, film and

Continued on page 38

SQL server supports 64 users

Gupta's SQLbase 16M-byte version fills gap between MS-DOS and OS/2

BY DOUGLAS BARNEY
CW STAFF

MENLO PARK, Calif. — As many as 64 concurrent users can be supported on a single data base server with a recently released version of SQLbase from Gupta Technologies, Inc.

Many server products are crippled by the lack of addressable memory under Microsoft Corp.'s MS-DOS, which limits the number of concurrent users. To alleviate that problem, the Gupta data base product was reworked with the help of DOS/16M, a product from Rational Systems, Inc. that allows applications to address up to 16M bytes of random-access memory.

SQLbase is intended to fill the gap between MS-DOS and OS/2, a large-memory multitasking operating system from Microsoft and IBM that recently began shipping.

For one user, SQLbase is the answer, but the DOS/16M version is not. "We tested it, and it was adequate, but the timing wasn't right for us to use it. We are looking for memory relief, but are pressing Gupta to recompile the stuff with the OS/2 compilers so we can actually run it in OS/2 mode," a user with a Fortune 100 company said. "We view the DOS/16M as more of a dead end right now." Gupta said it is planning an OS/2 implementation of SQLbase.

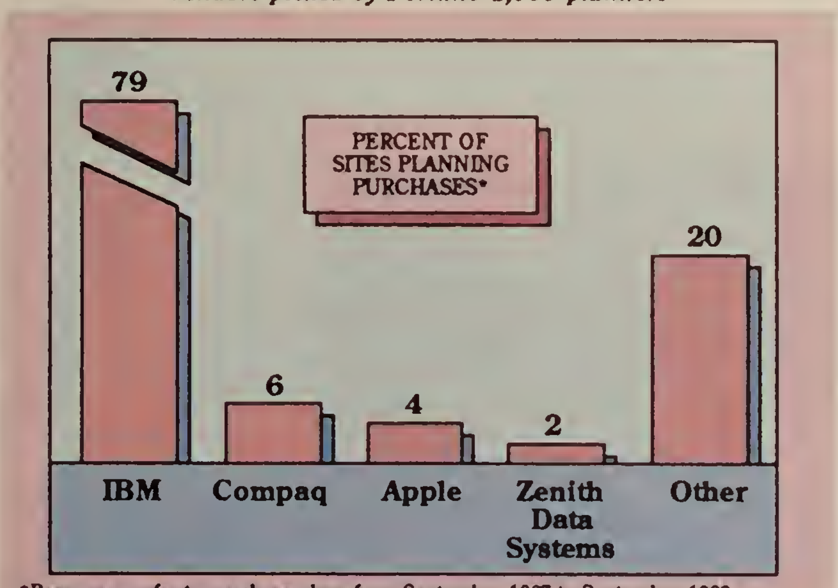
The Gupta product is based on SQL, runs on local-area networks and, through SQLnet, can transparently access IBM's DB2 mainframe data base software. These capabilities have attracted some customers who are interested in distributed data bases and connectivity through SQL.

A multiuser version sells for $2,995, and a single-user version is available for $995. Customers with an Extended Support Agreement can upgrade within 90 days at no additional cost, Gupta said.

Data View

Personal computer suppliers

Vendors picked by Fortune 1,000 planners



*Responses refer to purchase plans from September 1987 to September 1988

INFORMATION PROVIDED BY COMPUTER INTELLIGENCE

AT board to run Sun-3

BY ALAN J. RYAN
CW STAFF

BILLERICA, Mass.— Users do not necessarily need a Sun Microsystems, Inc. workstation to run Sun-3 software. All they need is an IBM Personal Computer AT and a board.

So contends New Media Graphics, which recently introduced its Motorola, Inc. 68020 Workstation-on-a-Board (WOB). The product is targeted at users who desire the ability to run applications for the worksta-

Continued on page 37

PC project linked to mainframe

BY STEPHEN JONES
CW STAFF

NOVATO, Calif. — The Breakthrough Software division of Symantec Corp. recently announced a software package that provides a one-way link between its Time Line microcomputer project manager and the Tellaplan manager for mainframes from Computer Associates International, Inc.

Tellaplan Link enables users of the Time Line manager and its Time Line Graphics add-in program to upload data into the Tellaplan mainframe system. The package is designed to give micro users the high-level graphics capabilities of a mainframe while tying together large project summaries fed in from a number of personal computers.

"If project schedule data is going to be useful, it has to be linked from the PC to the main-

Continued on page 37

Inside

- Turbulent times: IBM's Lowe speaks out on direction of PS/2, RT PC strategy. Page 35.
- National Datacomputer offers a hand-held IBM PC compatible. Page 37.
- AJS Publishing introduces an expanded version of its data base library. Page 40.

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SMALL TALK

William Zachmann

An eloquent commodity

Toshiba America, Inc. is well known as the leading vendor of high-quality laptop computers. The firm's floppy disk and hard disk laptops have proven to be real winners with users and reviewers alike. As a result, they have outsold IBM's laptop by a wide margin.

Although Toshiba's printers are not as well known as the company's laptops, they have long delivered equally impressive quality, performance and value. Toshiba's P351SX, the company's newest, top-of-the-line 24-pin dot matrix printer — with a suggested list price of $1,499 — is an excellent example.

With performance rated by the manufacturer at 360 char./sec. in draft mode and 120 char./sec. in letter-quality mode, and with graphics resolution of 360 by 360 dot/in., the P351SX is clearly competitive with the best of what anyone has to offer. It provides crisp, clear output that is about as good as you can get from a dot matrix printer.

Where it really stands out, however, is in its intelligently designed and well-implemented features. The P351SX represents the way effective innovation can make what is essentially a standard product stand out among its competitors.

Fundamentally, nearly all printers do the same thing. They put marks on paper in fairly standard ways. Basic character sets, control sequences and so forth come in a small number of alternative de facto standards.

As with consumer electronics goods like televisions, video cassette recorders and high-fidelity audio systems, however, the standardized, commodity-like character of personal computer printers still leaves plenty of room for innovation.

The P351SX embodies a lot of little features that increase versatility and make life easier for the user.

Consider, for example, the P351SX's controls. Completely free of DIP switches to set, the P351SX has only six control switches and a power switch.

A two-line by 16-char. LCD display situated on the front panel is used to show — quite simply — what amounts to a sophisticated menu system. Font selection, pitch, emulation

Continued on page 38

IBM's Lowe sets matters straight on direction of PS/2, RT PC lines

It's been an interesting year for William C. Lowe, president of IBM's Entry Systems Division. In April, his group unveiled the Personal System/2 series, which, along with IBM and Microsoft Corp.'s OS/2 and Presentation Manager operating system software, promises to transform the personal computer standard that IBM has fostered since the early 1980s. Reaction to the announcements among corporate accounts was mixed.

IN PERSON

William C. Lowe *says RISC PCs will outpace Intel models.*

Many buyers, concerned with the new products' level of compatibility with corporate hardware and software investments, opted for clones or for Apple Computer, Inc.'s Macintosh. Other companies, particularly large IBM host shops, bought the PS/2 strategy hook, line and sinker.

On the day he received his personal copy of OS/2 Standard Edition 1.0, Lowe sat down with *Computerworld* Senior Editor Ed Scannell to discuss IBM's workstation strategy for the next two or three years.

When did you decide to transfer the RT Personal Computer over to the Entry Systems Division?

We actually moved it in July of this year. We would have moved it in earlier, but we decided to move it in the summer because we felt that by that time, there would be little risk that people would misunderstand our intentions.

Now that we have a whole PS/2 product line based on the Intel architecture, we plan to offer AIX [IBM's version of Unix] across a family of workstations that includes the 386 models of the PS/2, the RT and anticipated follow-on products.

Why does it make more sense to move the RT PC in with the Entry Systems Division than to move it in with the System/36 and 38 group?

Well, if we are going to build a series of workstation products that use both the Intel-based PS/2s and the reduced instruction set computer [RISC]-based, RT-like products, we really are going to do a better job of it if we have them organized together.

The real key with these technical workstations is, you are getting so much power in processor performance, capacity and memory that they'll be suitable for doing the job of a multiuser server. But they also allow us to get into applications areas that workstations weren't in three, four and five years ago, such as the engineering, scientific, artificial intelligence and diagnostic medicine kinds of applications.

What is the long-term relationship between the PS/2 Model 80 and the RT PC?

On the PS/2 side, we are going to take advantage of technology, higher performance and capacity. We are going to grow that product line in every direction that makes sense to us from a business point of view.

Our expectation is that we will be able to grow the RISC-based products as well, taking advantage of that technology and consistently having better performance on the RISC-based products than we have on the Intel-based products.

A couple of years from now, we'll probably have PS/2s that are higher performance than today's RTs. But we would expect to have products in the RT family, at that point in time, that are substantially faster than the Intel-based products that we'll have at that point in time.

So we are going to grow both families, and we are going to attempt to provide a consistent set of technical workstations based on Unix that provide granularity and price/performance and function.

IBM's Unix priority comes as a surprise to most people.

We have provided forms of Unix on our products primarily as an accommodation to our customers who required the use of Unix applications in addition to the support we provided them. We are very much driven by what our customers require. We are seeing requirements from our customers increasing for Unix, so we respond.

We have always been strong in the engineering-scientific area. Previously, it has been

Continued on page 38

Liberal view of license outfoxes Fox

BY DOUGLAS BARNEY
CW STAFF

TRUMBULL, Conn. — When Fox Software, Inc. sold Frank Rogers an unlimited runtime license for its Foxbase data base software, the firm had no idea what Rogers was planning.

Instead of developing a specific application, as most runtime licensees do, Rogers wrote a front end that reportedly turns Foxbase into an Ashton-Tate Corp. Dbase III Plus workalike that Rogers plans to sell for $29.

The situation gets stickier. Foxbase is a so-called clone of Dbase, and Ashton-Tate has threatened the cloners with legal trouble. When Rogers used a clone of Dbase to clone Dbase, Fox officials reportedly warned him that he might get into legal hot water. "Fox is unhappy with it," Rogers said.

Rogers, an MIS manager by day and president of 1 On 1 Computer Solutions, Inc. by night, said he asked Fox if there was any limit to what he could do with his unlimited runtime license. Fox told him of no limits.

While Fox is not currently considering any legal action against Rogers, the firm is planning to modify its runtime license to prevent the development of products that might compete with the full Foxbase package, said Richard E. Ney, vice-president of marketing.

Ney said he doubts the product will provide users with enough capability, but Rogers is going ahead and marketing the product, called 1 On 1 = 3, as a replacement for and introduction to Dbase. He said he plans to ship it by the end of this month.

Would you call these machines Sherpa portables?

BY JULIE PITTA
CW STAFF

When Compaq Computer Corp. designed its portable personal computer, the machine was probably envisioned as a tool for the executive so dependent on his PC that he'd cart it from office to home and from meeting to meeting. It is not likely that Compaq developers ever thought their system would take part in an expedition to climb Mount Everest.

Going where few PCs — if any — have gone before, two Compaq Portable IIs journeyed to the Himalayas between August and November last year with a 60-member expedition set to climb the 29,028-foot peak. The mountain climbing team, led by two American filmmakers, set out to retrace the 1924 expedition of two British climbers who reached the top of the mountain only to disappear on their way down.

The two British climbers, George Mallory and Andrew Irvine, are believed to be the first to have climbed Mount Everest.

Filmmakers Andrew Harvard, David Breashears and George Bell, partners in Arcturus Motion Pictures Co. of New York, created two television programs from the trip: an ABC-TV sports special and a British Broadcasting Co. documentary on the two British climbers.

Harvard admitted the two original explorers would probably have cringed if they knew that machines were helping mountain climbers in their trek up Mount Everest. But Mallory and Irvine did not have to contend with a film crew, production budgets and the assignment to write a newspaper column for the *Los Angeles Times.*

"Managing the climbing and the filmmaking is a double-barreled proposition. It becomes very complicated," Harvard said. "The computer doesn't help you climb the mountain, but it's a tool that makes a large expedition, in conjunction with a film project, easier and safer to do."

In looking for a PC to take along, Harvard and his partners wanted a mixture of durability and flexibility. "It had to be able to do a lot of jobs and be accessible to a lot of people," he said. "It also had to be a PC that would not be fussy in what's a pretty wild environment."

The two Compaq portables proved their toughness on the trip to the Himalayas, a journey that began with a plane ride from company headquarters in Houston to the Boulder, Colo., airport. They were then shipped by truck to Seattle and loaded onto a plane destined for Beijing. A train transported the PCs to central China, where they were again loaded onto a plane, this time headed for Lhasa, China.

On the final leg of the trip, the portables rode along with the ex-

Continued on page 37

Honeywell Bull series to protect investment

MS-DOS-based PCs allow expansion capabilities for users when needed

BY ALAN J. RYAN
CW STAFF

MINNEAPOLIS — Honeywell Bull, Inc. introduced Microsoft Corp. MS-DOS-based personal computers last week that it said are designed to protect the users' investment in hardware.

The AP-X series, based on Intel Corp.'s 80286 microprocessor and the 80386-based PC SP, can reportedly be expanded as technology grows. Both series of computers will also run Honeywell Bull's version of Microsoft's MS OS/2.

The units incorporate Honeywell Bull's new Microprocessor Exchange (MPX) technology, which allows users to exchange the processor board and auxiliary support boards with more advanced processors as they are needed. The existing cabinet, storage devices and data will be retained, company officials said.

Exchange process

The exchange involves removing the processor card, replacing it with a new processor card and adding a memory card, according to Jack Dwyer, PC product manager at Honeywell Bull.

The AP-X series can be upgraded to the 80386 processor using an upgrade kit. The kit, which is expected to be available in February, includes the processor card, a 2M-byte memory card, manuals and Federal Communications Commission certification stickers. The kit will sell for $2,975.

Four AP-X models are offered, and all are available immediately, the company said.

Prices begin at $2,950. The AP-X name stands for Advanced Processor with the MPX feature.

The three-member PC SP series machines start at $5,880, and shipments are expected to begin next month, the company said.

According to Dwyer, the SP stands for Superior Processor.

Positioning for tomorrow

Dwyer said Honeywell Bull is building the SP series with the MPX capability, although no growth path is currently available for it. Eventually, however, there may be an appropriate growth path from the 386 chip, he said.

"We're trying to position our machines so that we provide our customers with the upgrade capabilities," Dwyer said. "They can buy today's technology for today's applications and can move to tomorrow's technology for tomorrow's applications when they become available."

Both series of computers include 5¼-in. 1.2M-byte disk drives. A 3½-in. 720K-byte disk drive is available as a $190 option. Also available is a new color monitor for $595.

"We fully intend to offer OS/2 sometime in the second half of 1988 on both the AP-X and the SP series," Dwyer added.

Users receive graphics link

BY STEPHEN JONES
CW STAFF

TORRANCE, Calif. — Ashton-Tate Corp. announced a software utility package last week that gives users of the company's graphics products an on-line link to its new graphics service operation.

Master Graphics Express connects users of Ashton-Tate's Chart-Master, Diagram-Master, Sign-Master and Presentation Pack to the graphics service and promises delivery of slides, overhead transparencies or prints in as little as 24 hours.

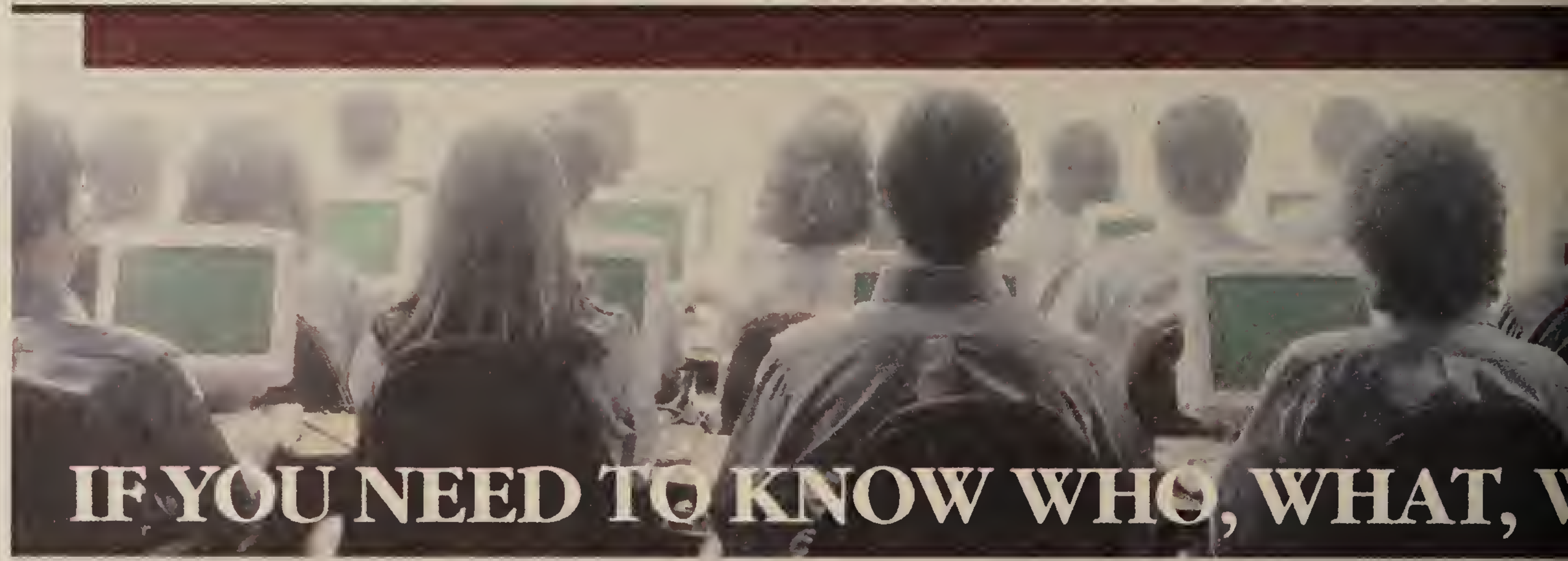
The $50 utility package enables users to send graphics output from a personal computer to the service via a modem and a toll-free telephone line. The on-line capability is designed to cut down on the time it takes to bring a presentation graphic from the computer screen to a user's hands.

Competitive field

Presentation graphics is becoming an increasingly competitive segment of the software industry, and analysts said more graphics development services could crop up to enhance the appeal of software companies' products. Other companies that have jumped into the field include Microsoft Corp., with its acquisition of Forethought, Inc., and Symantec Corp.

Ashton-Tate claimed that unlike other graphics utility tools, Master Graphics Express allows users to preview the layout of a slide or print on a personal computer screen before it is sent to the development service to be processed.

Users can tap in to the on-line service with one keystroke once they receive a site code from Ashton-Tate. Next-day delivery costs $15 per slide plus an $18 charge for overnight shipping.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Fast, efficient information retrieval is possible in even the largest databases. BASIS uses "fast path" indexing techniques, providing a simple, yet powerful query facility that makes complex searching easy. Novice and casual users may retrieve information and generate reports using menus and simplified command statements. Advanced users may compose freeform query statements and generate ad hoc reports using the English-like query and data manipulation language. BASIS' help facility operates at three levels of expertise—beginner, advanced and expert so you always have immediate access to assistance.

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National Datacomputer releases hand-held PC

BY SUZANNE WEIXEL
CW STAFF

BILLERICA, Mass. — A hand-held personal computer said to provide IBM PC-DOS and Microsoft Corp. MS-DOS compatibility was recently introduced by National Datacomputer, Inc.

An enhanced version of the company's Datacomputer 2.0, the Intel Corp. 80C88-based Datacomputer 3.0 was designed for people who work in the field, not at a desk.

It features an 8-line by 26-char. backlit LCD, numeric and QWERTY keyboards, 128K bytes of random-access memory — field-upgradable to 960K bytes — and five ports including printer, phone jack, bar-code wand, external power and RS-232 compatible.

According to a company spokesman, a RAM-resident application-generation system allows the user to program the Datacomputer for data collection through its keyboard.

Data is transmitted in files that can be read by Lotus Development Corp.'s 1-2-3, Ashton-Tate Corp.'s Dbase and other third-party PC software, the vendor said. Data transmission is via a Hayes Microcomputer Products, Inc.-compatible modem or a directly connected cable, according to the company.

The Datacomputer 3.0 weighs 35 ounces and runs on a 4AA or 8AA battery power supply.

According to the spokesman, the Datacomputer 3.0 is usually the first step in computerization of a previously unautomated job.

Applications include inventory management, field sales, field service, market research and claims adjustment.

Available now, the Datacomputer 3.0 is priced from $1,645.

The original Datacomputer 2.0 was released in 1986. More than 2,700 have been sold, the vendor said.

Sherpas

CONTINUED FROM PAGE 35

pedition on a three-day trip over bumpy dirt roads. "The boxes were dropped more than once," Harvard said.

The journey to the Himalayas is mild compared to the treatment the PCs received at the expedition's base camp, established at 17,000 feet. There, the Compaqs were used to keep track of the expedition's food, climbing equipment and medical supplies and to manage its six-currency budget. The mountain climbers also used the machines to write and send their columns for the *Times*.

Environmental conditions were extreme: Temperatures at the camp ranged from 80 degrees Fahrenheit to just above zero; high-desert winds blew dust at the machines; and the tent where the portables were housed collapsed twice under the weight of snow, drenching the PCs. "They got a fair beating," Harvard said. "They were used by people who weren't the gentlest of souls."

Bad weather and an accident that resulted in the death of a crew member ended the climb before the expedition ever reached the top.

PC project

CONTINUED FROM PAGE 33

frame," said Rod Turner, general manager for the Breakthrough division.

The package requires 512K bytes of memory and runs on IBM Personal Computers, compatibles and Personal System/2s.

It costs $4,000 for every mainframe that it is linked to and reportedly will be available by the middle of first-quarter 1988.

Tellaplan Link is installed as a menu item in the Time Line Graphics add-in package and features a user interface similar to that seen on Lotus Development Corp.'s 1-2-3.

Turner said the product is aimed at the installed base of 80,000 Time Line users who want work group and department-level project planning and management in addition to professional-quality graphics.

AT board

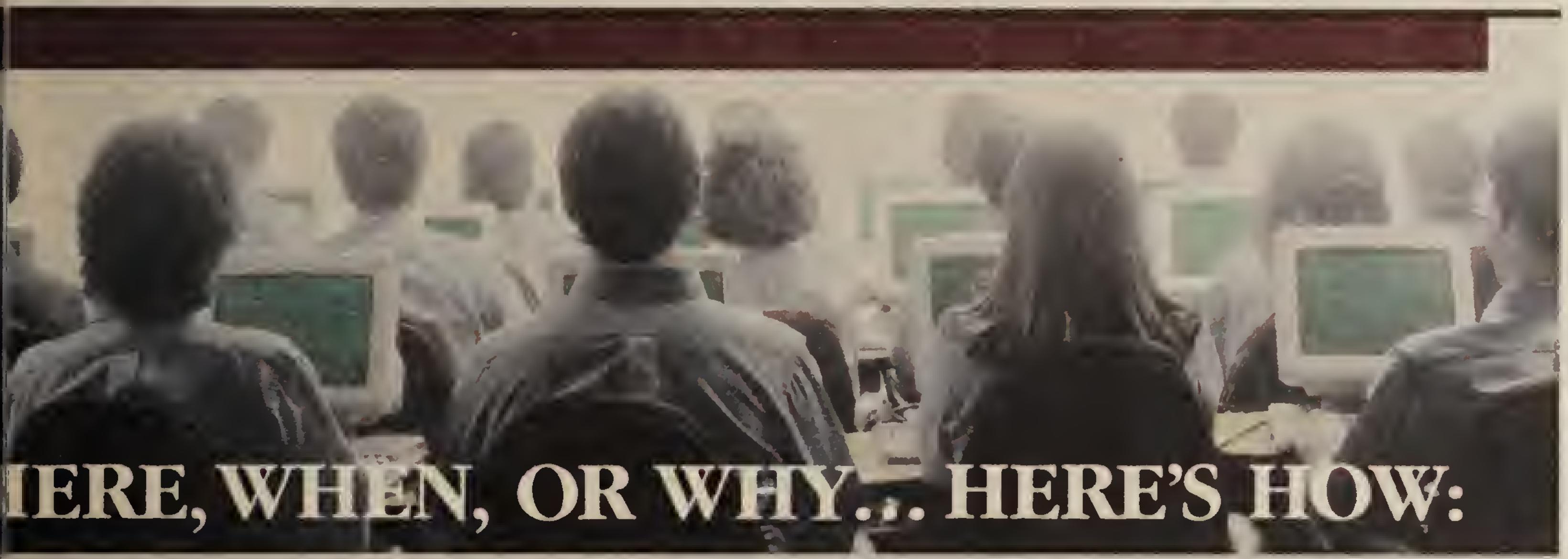
CONTINUED FROM PAGE 33

tion on a PC AT and OEMs who want to be able to deliver their software on lower cost machines without sacrificing performance. The board is shipping now in all configurations.

Designed to handle calculation-intensive applications, WOB can reportedly speed up the AT to workstation levels. It is available in different configurations, from 16 to 25 MHz, said Martin Oakes, New Media Graphics' director of sales.

If a user wants to run a few Sun-based applications, this might be a cost-effective way of doing it, Oakes added. A runtime Unix-compatible operating system is provided that can reportedly execute Sun-3 applications in the 68020 WOB without the problem of source code changes, the company claimed.

List price starts at $995 for the 16-MHz version. The 25-MHz version is currently priced at $1,795. A graphics option is available for an additional $2,000.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Zachmann

CONTINUED FROM PAGE 35

mode and other characteristics are easily set, temporarily or permanently, through the menu system.

In addition to the Toshiba/Qume 11 normal operational mode, an IBM Proprinter/Graphics Printer mode is built in as well. Epson America, Inc. LQ series emulation is an option. The printer's large standard 32K-byte buffer can be expanded to 64K bytes.

A multistrike film ribbon can take the place of the usual reusable fabric ribbon for better print quality. Fanfold paper is self-loaded by the printer, and single sheets can easily be printed without removing tractor-fed continuous-form paper. Optional accessories include single- and dual-bin automatic sheet feeders and an envelope sheet feeder. The P351SX can print on up to six-ply forms.

The Toshiba P351SX is unquestionably one of the best 24-pin dot matrix printers I've used. It proves there is plenty of room for innovation even in a highly standardized commodity product. Its high speed and rugged construction make it particularly desirable for high-volume production applications. Its well-designed features, however, make it well worth the consideration of anyone who wants a full-featured letter-quality dot matrix printer.

Zachmann is vice-president of research at International Data Corp.

Lowe

CONTINUED FROM PAGE 35

driven by our large mainframe processors. But with this technology becoming available in workstations, we want to meet our customers' needs, and we think we are probably better equipped to tie this technology together than anyone else. We have done it before as we grew from 650s to 1401s to 360s to 370s. Many of the challenges that we have been encountering relate to problems that we have been able to solve before.

How are you going to integrate the RT PC with your Systems Application Architecture (SAA)?
We are not going to sacrifice being Unix or make it difficult to transport code that has been written for other Unix-based systems onto our AIX-based systems. Beyond that, we are going to be consistent in every way with SAA.

So you are talking about coming up with a compromise between X Windows and the Presentation Manager?
There are going to be several phases, is the way I would put it. First, we are putting AIX on the PS/2, so we will have the consistent AIX-X Windows interface on the PS/2 and the RT and its follow-ons. Secondly, it is our intention, in time, to put OS/2 on the RT family base. And when you do that, by definition, that product line has all the attributes of the PS/2. So a likely thing to do is to take the steps to make X Windows conform [with SAA].

What technological sense does it make to combine RISC and Intel 80386 technologies?
I don't believe people appreciate, and it is partly our fault, the power that the Micro Channel gives you for concurrent operations. We are beginning to see I/O cards become available on the PS/2 that really take advantage of the Micro Channel, and that is really going to be the proof of the pudding. [The RT PC development group] is working with the PS/2 team to expand on that Micro Channel. I mean, it is an architecture; it is a living thing.

Where else might you put the Micro Channel, other than the PS/2s and RT PCs?
Through time, I believe you will see the Micro Channel on quite a few implementations. For the same reason that it makes sense for the RT group to take advantage of the resources that have been spent on the Micro Channel, it will make sense for other people to interface with the I/O devices that we do for the PS/2 on their products. Also, as you do that through time, it makes the job of SAA easier because the consistency comes through consistent implementation.

Do you see the Micro Channel moving down to the portables?
In April, we announced an Intel 8086 machine, a couple of 286 machines and several versions of a 386-based system. Through time, the way the price/performance of the technology is improving, I expect that you'll get more function at every price point we offer today and that that function will initially mean more microprocessor power and will eventually mean the Micro Channel covering the entire product line.

However, that is not going to happen next Tuesday afternoon. I just see this coming as a cascade. For instance, we will introduce new function in 1988 at every price point we introduced in 1987.

Will OS/2 Extended Edition run on the compatible machines?
The Extended Edition will run on our old 286-based products — that is, the AT and the XT Model 286. We are planning to take advantage of the Micro Channel with the way we implement the Extended Edition. Our expectation is that our Extended Edition and Micro Channel-based products will run superior to other products in the industry.

How?
Well, particularly in the communications environment, where you get a lot of asynchronous interrupts. Our intent here is not to rule out anybody. Our intent is to provide the best performance we can to our customers.

I would suggest that if you look at the clone competition, some of them are very compatible, and some of them aren't too good. The areas where the compatibility usually breaks down is where you have these asynchronous interrupts.

That is why we decided to design the Extended Edition software ourselves, because, in that environment, we have to ensure a superior relationship between the hardware and software to meet performance requirements of our customers. It is a requirement that we do a good job here.

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Scannell

CONTINUED FROM PAGE 33

artwork for making through-hole boards. With IBM's Personal System/2, which has VGA graphics on the motherboard, gaining momentum, there should be a lot of interest from board makers.

Pugilistic Marketing 101? We recently heard an interesting theory that may explain much of what is happening in the micro spreadsheet market. According to this spreadsheet philosopher, Microsoft took its cue from the politicians who get attention by picking a fight with the leader of a particular race. By essentially picking a fight with Lotus, Microsoft has caused much of the industry to simply forget about other Lotus competitors. Come to think of it, we haven't heard much (good, anyway) about Javelin, Surpass, Supercalc, Sylk, Predict and Framework.

Check's in the mail, product's in development. Some companies announce and advertise products before they are finished and available. But a select few announce, advertise and take orders for products that aren't complete. Borland, for one, has been cheerfully taking orders for Quattro, which has only recently begun to ship. A Texan told us of his experience trying to see — not buy — an advertised product from a firm that was accepting orders. The source was interested in Lucid 3-D, a three-dimensional spreadsheet from the Personal Computer Support Group. Being just down the street, the source offered to pop in for a quick look-see but was told the vendor didn't have the product up and running yet. But after a quick check with the firm, *Computerworld* discovered that the product just began shipping and that back orders are being filled.

Neither hail nor sleet nor bugs. The U.S. Postal Service is now supplementing its mainframes with micros to make sure that the 60 million pieces of mail it handles every day during the Christmas season get through. The Postal Service has been replacing its paper tape input devices with personal computers during the last year or so, which has apparently resulted in significant productivity improvements. The next step is to bring in minicomputers in some of the larger offices and use PCs as terminal emulators to access the equipment data base.

Quote of the week. "The name Wordperfect was so unpopular at the time that they never gave me the $100 prize money for coming up with the name," says Wordperfect's vice-president of marketing W. E. "Pete" Peterson, recalling the less-than-enthusiastic response to his winning entry in the contest to rename the former SSI, Inc.

Dissa and data. Microsoft finally shipped its Windows 2.0 operating environment (due September 1986) as well as Windows/386. Microsoft says Windows 2.0 is two to four times faster than the previous version.

Softlogic Solutions released an enhanced version of its good-looking spreadsheet compiler, At Liberty.

Scannell is a *Computerworld* senior editor, microcomputing.

NEW PRODUCTS

Systems

Profit Technology, Inc. has introduced a line of IBM Personal Computer-compatible microcomputers called the **Professional System/One** (Pro/One).

The Pro/One line includes 17 models. Features include built-in disk drives for both 3½- and 5¼-in. disks, eight full-size expansion slots, a color display of 256 colors from a palette of more than 256,000 and a monochrome display of up to 64 shades of gray.

The Pro/One computers include the vendor's Breakthrough Mentor software that provides real-time multitasking capabilities and a flashing and rotating windowing feature.

Prices for the Pro/One systems range from $1,610 to $10,995.

Profit Technology, 39 Broadway, New York, N.Y. 10006. 212-809-3500.

Software applications packages

A modeling tool for developing a strategic plan for information systems development has been introduced by **P-Cube Corp.**

The program, called **Opportunities/IRM**, models and catalogs the flow of data in an organization and automatically measures the improvement potential in information support of activities such as line, staff and management. The measures are used to identify and define specific manual and computer-based systems.

Opportunities/IRM automatically ranks the information improvement opportunities in terms of potential for supporting the goals and objectives of the organization.

Opportunities/IRM runs on an IBM Personal Computer AT. The base price is $8,500.

P-Cube, 915 Kings Canyon Road, Brea, Calif. 92621. 714-990-3169.

Software utilities

Vantageline, a front-end interface to the Dow Jones News/Retrieval Service public data base has been announced by **Forthright Systems, Inc.**

The interface is said to provide Dow Jones News/Retrieval Service subscribers with the option to view numerical data in graphics format. It operates in the IBM Personal Computer or Personal System/2 environment and accesses the Dow Jones News/Retrieval Service through such public networks as McDonnell Douglas Network Systems Co.'s Tymnet.

Vantageline offers menu-driven selection of information from such Dow Jones news services as Quicksearch and Disclosure On-line. It comes with Forthright's Touchpad hand-held remote-control device for one-touch access.

Vantageline costs $395.

Forthright Systems, 490 Lakeside Drive, Sunnyvale, Calif. 94086. 408-730-5700.

Development tools

A multiuser development environment for the IBM Personal Computer and Personal System/2 families of computers has been announced by **Pecan Software Systems, Inc.**

The **Poly Power System** is said to support up to three users on a standard IBM PC AT-class machine.

The development environment and the applications built with it can function in multiuser mode, according to the vendor.

A virtual terminal mode is also supported, allowing users to switch among multiple terminals on the same workstation.

The system includes configuration utilities, multiuser device drivers, message handling facilities and a utility that provides protection for shared-file applications.

The Poly Power System is priced at $399.95; each compiler is priced at $79.95.

Pecan Software Systems, 1410 39th St., Brooklyn, N.Y. 11218. 718-851-3100.

Software enhancements

Executive Technologies, Inc. has introduced **Release 2.0** of its **Searchexpress** software for the IBM Personal Computer and compatibles.

Release 2.0 features immediate display of large documents, including zoom to paragraph or sentence only; the ability to import files from word processing applications and ASCII files; and the ability to delete and undelete a document.

In addition, the product features optional automatic generation of titles and increased batch file indexing speed.

Other features include weighted word search, search for similar documents and hypertext, which enables users to link related documents for recall, according to the vendor.

Version 2.0 costs $179 for a version that can search up to 1,000 documents, $349 for a version that can search one million documents and $695 for a write-once optical version.

Executive Technologies, 2120 16th Ave. S., Birmingham, Ala. 35205. 205-933-5494.

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At SAS Institute Inc., we've invested more than 10 years of research—and over a million lines of code—in the SAS® System, the world's leading data analysis software. So you can bet we left nothing to chance when we chose the C language for the next generation of our software.

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- Support for signal handling including program checks and terminal interrupts, and non-standard signals such as timer interrupts and stack overflow
- Many built-in functions including string handling
- In-line assembler.

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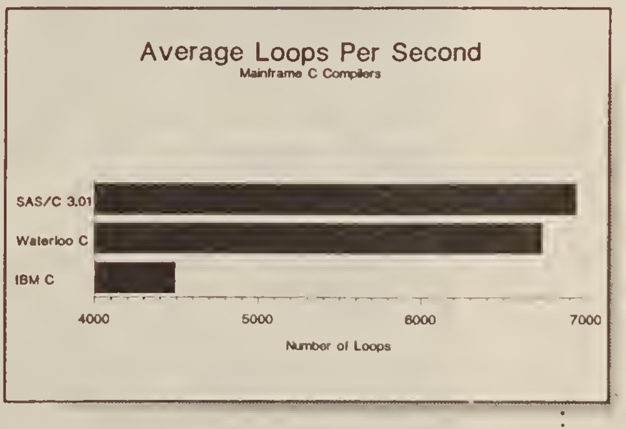
Using a C version of the Dhrystone benchmark, the latest SAS/C compiler release produces the fastest code among the top 3 mainframe compilers. It even tops our own previous release by 35%.



I'd like to put the SAS/C™ compiler to the test with a free 30-day trial, and my free copy of the Dhrystone benchmark program. Give me the details.

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Cary, NC, USA, 27512-8000

An expanded version of **DB/Lib**, a data base library, has been announced by **AJS Publishing, Inc.**

Version 2.0 of DB/Lib is said to be fully compatible with Microsoft Corp.'s Quickbasic 4.0. According to the vendor, DB/Lib provides Quickbasic with relational data base management capabilities, including read and write access to Dbase file structures.

It includes two libraries of program development routines for use by programmers who are writing data base-oriented applications in Quickbasic. The Data Management Library contains a set of routines for record and file management, and the Extended Function Library provides data selection and formatting functions.

DB/Lib Version 2.0 costs $139.

AJS Publishing, P.O. Box 379, North Hollywood, Calif. 91603. 818-985-3383.

Data storage

CMS Enhancements, Inc. has added a 140M-byte interface drive for the Apple Computer, Inc. Macintosh II to its **Pro-Series** family of hard-disk subsystems.

The 5¼-in. half-height drive, called the Pro-140 II/I, features an average access time of 26 msec. Other features are automatic head park capabilities and a dynamic brake-lock system.

The Pro-140 II/I is priced at $2,695.

CMS Enhancements, 1372 Valencia Ave., Tustin, Calif. 92680. 714-259-9555.

A half-height compact disk/read-only memory, or CD-ROM, unit said to allow two drives to be fitted into a single full-height space has been announced by the Industrial Division of **Hitachi Sales Corp. of America.**

Called the **CDR-3500**, the unit features a basic capacity of 552M bytes. It allows horizontal or vertical installation, and up to four drives can be daisy chained together. The unit incorporates a two-channel playback circuit.

The CDR-3500 is said to have a mean-time-between-failure rate of 10,000 hours, a 40-pin parallel interface and a 40-pin header-type connector. It costs $869.

Hitachi Sales Corp., 401 W. Artesia Blvd., Compton, Calif. 90220. 213-774-5151.

Printers/Plotters/Peripherals

Conrac Display Products Group has released an IBM Video Graphics Array version of its **Model 7250 Autotrak** 19-in. multiple frequency scanning monitor.

The monitor provides 1,024- by 1,024-pixel resolution interlaced at scan rates ranging from 15.75 to 37 KHz. An interface adapter for IBM's Personal System/2 is available and can be set up for the analog display mode via a switch adjustment on the back of the monitor.

The Autotrak feature automatically locks on to the appropriate horizontal and vertical frequencies.

The Model 7250 Autotrak color monitor costs $2,995.

Conrac, 600 N. Rimsdale Ave., Covina, Calif. 91722. 818-966-3511.

A color monitor compatible with IBM's Personal System/2 Color Display 8514 has been announced by **Seiko Instruments USA, Inc.**

The monitor, called the **CM-1430**, is a 14-in. display offering color graphics of up to 1,024- by 768-pixels. It is compatible with the IBM PS/2 Video Graphics Array and supports IBM's Color Graphics Adapter, Enhanced Graphics Adapter, Professional Graphics Adapter and high-resolution modes.

The CM-1430 costs $1,095.

Seiko, 1130 Ringwood Court, San Jose, Calif. 95131. 408-943-9100.

Datacopy Corp. has announced the **Pro Scan Series 800**, three image scanners for use with personal computers.

The Model 840I features a 400 dot/in., 256-level gray-scale scanner and image-processing hardware and software and includes the Datacopy scanner control language.

The Models 840 and 830 operate under the control of Datacopy's image-processing software. The Model 840 offers 400 dot/in. resolution and 256 levels of gray. The Model 830 offers 300 by 600 dot/in. resolution at 64 levels of gray. It includes half-toning and contrast control.

The Models 840I, 840 and 830 cost $8,995, $4,800 and $2,800, respectively.

Datacopy, 1215 Terra Bella Ave., Mountain View, Calif. 94043. 415-965-7900.

Board-level devices

An IBM Enhanced Graphics Adapter (EGA) board said to provide 640- by 480-pixel color resolution for multiple frequency, color and monochrome monitors has been announced by **Boca Research, Inc.**

The **Multi-EGA** features automatic mode switching and displays color graphics in various resolutions with 16 simultaneous colors from a palette of 64, the vendor said. It offers drivers for Microsoft Corp.'s Windows and Autodesk, Inc's Autocad supporting 132-col. text display.

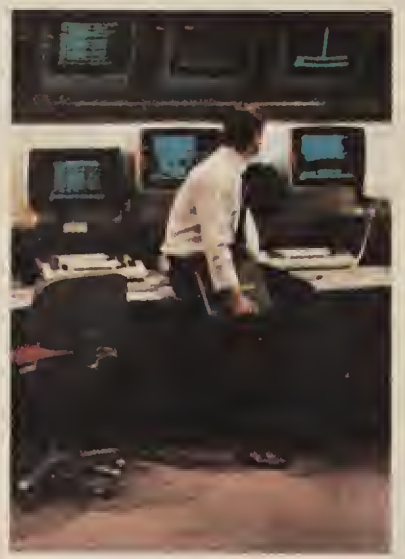
Multi-EGA costs $299.

Boca Research also announced the **IO/AT**, an I/O adapter that can provide up to eight serial ports in one IBM Personal Computer or compatible. The serial ports provide a transfer rate up to 56K bit/sec. Prices start at $119.

Boca Research, 6401 Congress Ave., Boca Raton, Fla. 33487. 305-997-6227.

Automated operations start with AutoMate/MVS™

Introducing automated operations to your data center may seem like an enormous task if you're unsure of where to start. Head in the right direction with AutoMate/MVS the first automated operations product from Duquesne Systems. AutoMate/MVS is a full function, rule-based automation tool that solves many operation problems in today's complex MVS data centers.



Operators use their time more productively with the automated console tool—AutoMate/MVS

AutoMate/MVS™

As the volume of online transaction processing increases, operations personnel face increasing amounts of low-level repetitive tasks and decision making. Service-level objectives become more difficult to meet, and the chance of human error increases dramatically. AutoMate/MVS relieves operators from these mundane, repetitive tasks and decreases the possibility of human error. The end result is increased productivity and system availability.

AutoMate/MVS has an extensive list of features which include:

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- Extended MCS console capabilities for better system and console support
- Alternative Operator Interface for easy use and fewer operator errors

For years, data centers worldwide have benefited from system productivity software from Duquesne Systems. Our reputation as a leader in the area of operations has been built on providing quality products and support. Protecting data integrity, managing and allocating tape drives, consolidating consoles, and management and retrieval of SYSLOG in multiple CPU environments are our specialties.

Start automating your operations today with Duquesne Systems, the company that started operations productivity. For more information, call **(800) 323-2600**, or **(412) 323-2600** in Pennsylvania.

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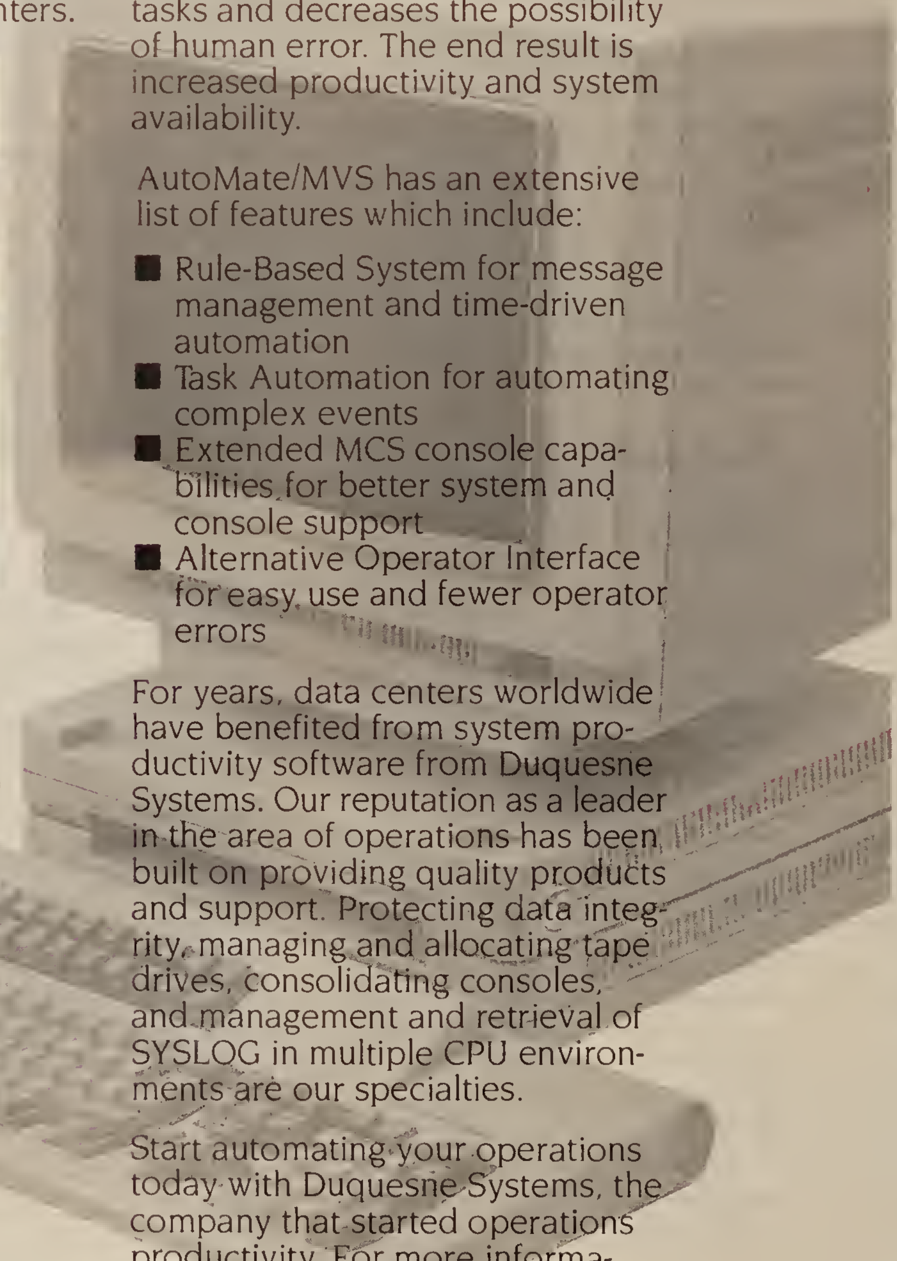

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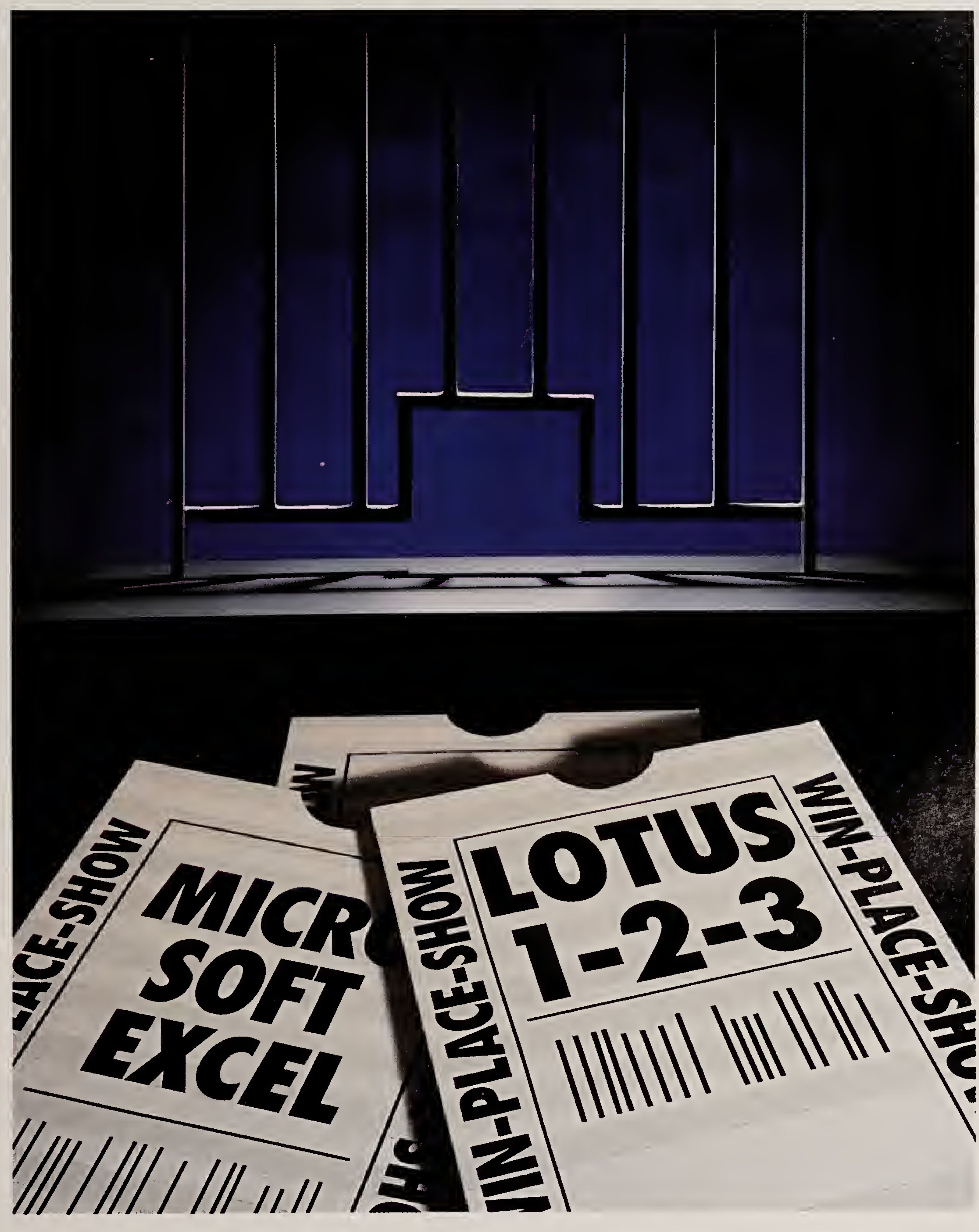

After years of unchallenged dominance, 1-2-3 is facing strong competition. Its rivals are parlaying microprocessor advances to reach new levels of functionality.

DECEMBER 21, 1987 • SPOTLIGHT NO. 35

“As soon as our ads started running in Computerworld, the phones started ringing.”

— Art Ingram
Vice President, Marketing and Sales
Tangram Systems Corporation

Art Ingram is Vice President for Marketing and Sales for Tangram Systems Corporation of Cary, North Carolina, a micro-to-mainframe software vendor. Tangram is currently riding high on its Arbiter, a cooperative processing technology that allows the integration of PCs and mainframes, regardless of network configuration.

The start-up company, whose software is in place at government, financial and manufacturing sites, wanted to promote Arbiter — and itself. And Art had determined that the best place to do both is in the pages of *Computerworld.*

"We needed to get the message to MIS managers and users that we can help them integrate thousands of PCs into the mainframe environment with Arbiter. Plus, as a new company, we were out to generate name recognition.

"It was clear from the start that Computerworld *would deliver the audience we're looking for because it addresses a broad cross-section of readers. All our campaigns are built around* Computerworld *and maybe one specialized publication. Take* Computerworld *out of the picture and there is no Number One choice.*

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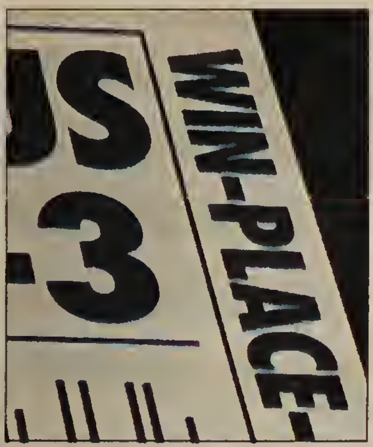

Interview

Dan Bricklin, the grand young man of spreadsheets, talks about the overwhelming success of Lotus's 1-2-3 and prospects for the emerging crop of competitors. Page S5.

I'll Take the High End . . .

Large-system spreadsheets may have taken on some of the flavoring of PC products, but vendors contend that only mainframe packages can satisfy the hunger that PCs have whetted for diversified data. Page S8.

Product Face-Off

Although Borland's Quattro expands on the basic foundation of 1-2-3, Microsoft's Excel breaks entirely new ground in spreadsheet design. Page S9.

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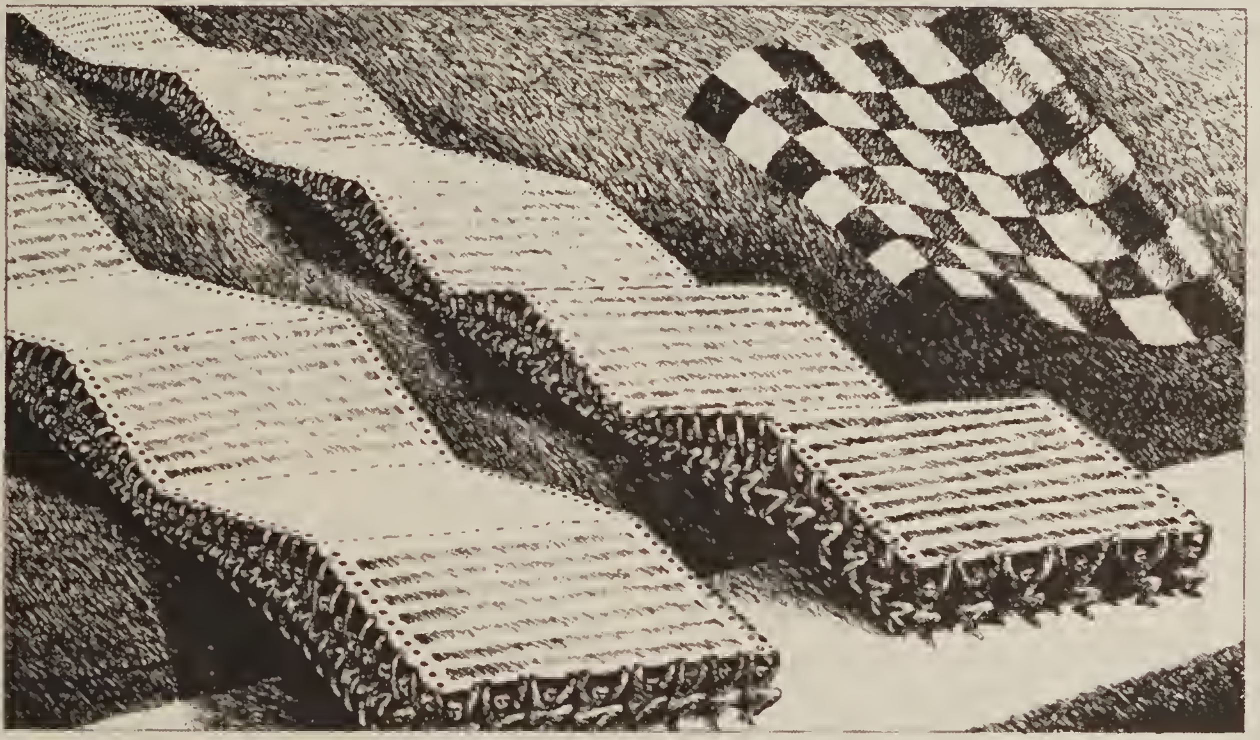
There's a lot of what-if-ing going on in the spreadsheet market about what users require and the extent of their loyalty

RACE OF POWER VS. POSITION

BY ALAN RADDING



PETER PERRY

Just when it seemed the field had been ranked and the odds established in personal computer spreadsheet software, a new pack of challengers materialized, ready to compete with the well-established base of Lotus Development Corp.'s 1-2-3. Suddenly, the race was on again.

This fall, three prominent contenders came on the field. Microsoft Corp. expanded its Excel line by offering a version for the IBM Personal Computer in mid-November. Borland International followed soon after with Quattro. And Surpass Software Systems, Inc., headed by former Micropro International Corp. President Seymour I. Rubinstein, has announced its entry, Surpass. Along with these challengers are two dozen spreadsheets plus any number of integrated packages.

Behind the sudden and nearly simultaneous emergence of a number of spreadsheet challengers to 1-2-3 lie several forces.

Perhaps most important is the fact that hardware with more horsepower, specifically the Intel Corp. 80386-based machines and IBM's Personal System/2, has opened up additional functional possibilities.

"Spreadsheets ride on hardware," says Philip Welt, product manager for Excel. He points out that every major spreadsheet, beginning with the first one, Visicalc, and including 1-2-3 itself, was preceded by a hardware change. In this case, the 386 machines, with their added memory and speed, have spurred the development of innovations such as the graphical interface and linked spreadsheets.

To run the new spreadsheet programs the way they are meant to be run, most users will need at least a 286 machine but preferably a 386 machine with a hard disk, high-resolution color graphics and extended memory.

Also contributing to the upsurge in spreadsheet creativity are new operating systems, some that are available now. Currently, it is Microsoft's Windows environment that is inspiring developers. But the action will quickly advance to the Microsoft and IBM implementation of OS/2, as soon as it is available, along with the Presentation Manager, which will provide a direct upgrade path from Windows. New operating systems will enable programmers to create larger, faster, more feature-laden spreadsheets that address more memory than ever before.

Another influence behind the next generation of PC spreadsheets is the broad appeal of the graphical interface, demonstrated by the popularity of the Apple Computer, Inc. Macintosh. By using the graphical interface and a mouse rather than keyboard character input, the new programs will provide more functions and still be relatively easy to master. If the user does not have a mouse or prefers not to use one, these programs can be used from the keyboard.

Finally, but significantly, advanced users of 1-2-3 have hit the limits of the program and are voicing their frustrations. The program's highly acclaimed macro capability, they say, keeps the macros within each spreadsheet. This requires more effort to use the same macros in another spreadsheet.

Linking or consolidating spreadsheets in 1-2-3 is cumbersome. Its graphics portion is limited,

---

Radding is a Boston-based author specializing in business and technology.

Race

FROM PREVIOUS PAGE

and printing output from it is unwieldly, relying on trial and error to get things right. Even when you succeed in getting what you want, users complain, 1-2-3 lacks true formal presentation quality. Some users are also concerned with its limited security and auditing provisions.

Not that anything is really wrong with 1-2-3. It is just that new hardware and operating systems have given users more possibilities than they ever expected, and in light of these possibilities, 1-2-3 suddenly loses some of its sheen.

Open to new software

Lotus, based in Cambridge, Mass., says it has its own new releases of enhanced versions of 1-2-3 under development that will address many of the program's perceived shortcomings. But marketers like Microsoft are betting that users buying the new hardware will be open to software designed specifically for those machines.

Such an occurrence would not be unprecedented. San Jose, Calif.-based Computer Associates International, Inc.'s Supercalc established the spreadsheet in Digital Research, Inc.'s CP/M operating environment. It might have gone on to achieve what 1-2-3 did except for the business world's "stunningly fast conversion from CP/M to MS-DOS" because of the IBM PC, a former Lotus executive says. Riding in the wake of IBM, 1-2-3 sailed onto the desktops of managers throughout corporate America.

There is some question, however, about how deep user dissatisfaction with 1-2-3 actually runs. Experienced users can accomplish almost anything they want through skillful manipulation of the existing program. Other users will never require additional capabilities.

Most spreadsheet users reach a plateau at which they are not interested in developing their skills with the program any further, notes Alex Kask, senior manager at Ernst & Whinney, a New York-based accounting firm. These people are not eagerly awaiting more powerful products.

Between the power users and the casual, disinterested users, however, spreadsheet vendors see a huge base of 1-2-3 users willing to switch from Lotus for a demonstrably better product — if they don't lose anything in the process. That group, along with new and unbiased users, represents the market that the producers of new spreadsheet products hope to tap.

It is almost miraculous how long 1-2-3 has dominated the spreadsheet market, especially considering the rapidly changing industry. The package has held a commanding lead virtually since its release in January 1983. It garnered more than $50 million in sales its first year and, according to figures compiled by International Data Corp. (IDC), a Framingham Mass.-based market research firm, generated $198 million in sales in 1986.

Ernst & Whinney's Kask

Irfan Salim, Lotus's vice-president and general manager of analytic software, confirms total sales of 1-2-3 at three million copies, which translates into an installed base of approximately eight million users. Overall, 1-2-3 probably commands a 70% market share, estimates the former Lotus executive, who is now heading up a public relations firm's high-tech division. Microsoft's Welt suggests that Lotus's market share might actually run as high as 80%.

No. 1 and still holding

While there are many spreadsheets on the market, some of which are quite good, few have offered a serious challenge to 1-2-3's market dominance, at least until now. Combined sales of Microsoft's Multiplan and Excel for the Mac totaled a comparatively scant $38 million. Supercalc ranked as the third best-seller in spreadsheet sales at $12.5 million. The fourth-leading spreadsheet, based on dollar volume of sales, is Paperback Software International's VP-Planner, with $2.8 million in 1986 sales, according to IDC.

Based on units shipped, Lotus held 62% of the market in 1986, shipping 750,000 units of the 1.2 million total. Microsoft shipped 260,000 units, while Paperback Software accounted for 60,000 and Computer Associates, 50,000.

Microsoft still markets Multiplan, which is considered a good basic spreadsheet, at $195, $300 less than 1-2-3's $495 retail cost. Multiplan lacks a data base and graphics, however, and, as a result of these and other deficiencies, never seriously challenged 1-2-3.

With Excel, Microsoft offers a dramatically different product for machines based on its MS-DOS operating system and powerful enough to handle Windows and OS/2. Multiplan probably will be kept around only as a basic spreadsheet for light users with Intel 8086 machines.

"Multiplan is still a pretty important product in Europe, so we'll come out with enhancements every now and then. But our main thrust is Excel," Welt says.

Supercalc has managed to survive, making the transition to Microsoft's MS-DOS and putting out a product that some users say rivals 1-2-3. However, at the same price as 1-2-3, Supercalc never offered enough incentive to abandon its competitor, the de facto industry standard.

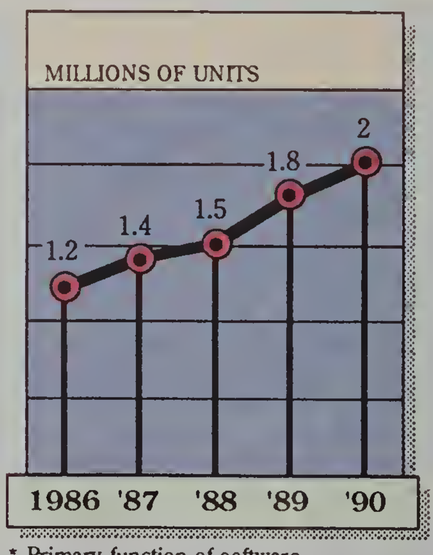
This summer, Computer Associates announced Supercalc4, which addresses many user complaints about 1-2-3. However, few industry observers say it will do any better than Supercalc products have in the past. In short, it will remain a niche product with a loyal user base that, in the end, simply does not want to go along with the mainstream.

"Supercalc offers some features that some guys just can't live without. There are always people who don't want to buy from the dominant vendor and will find good, valid reasons to buy other spreadsheets," says Jack McGrath, the publisher of Hingham, Mass.-based "@Max," a newsletter that covers the spreadsheet industry.

VP-Planner gained notoriety with Lotus's look-and-feel copyright infringement charges, but dedicated users of VP-Planner say the program is much more than a Lotus clone at a reasonable price. In particular, the product offers a multidimensional data base.

Spreading out

Actual and projected figures for unit sales of spreadsheets show a 17% annual growth rate*



* Primary function of software

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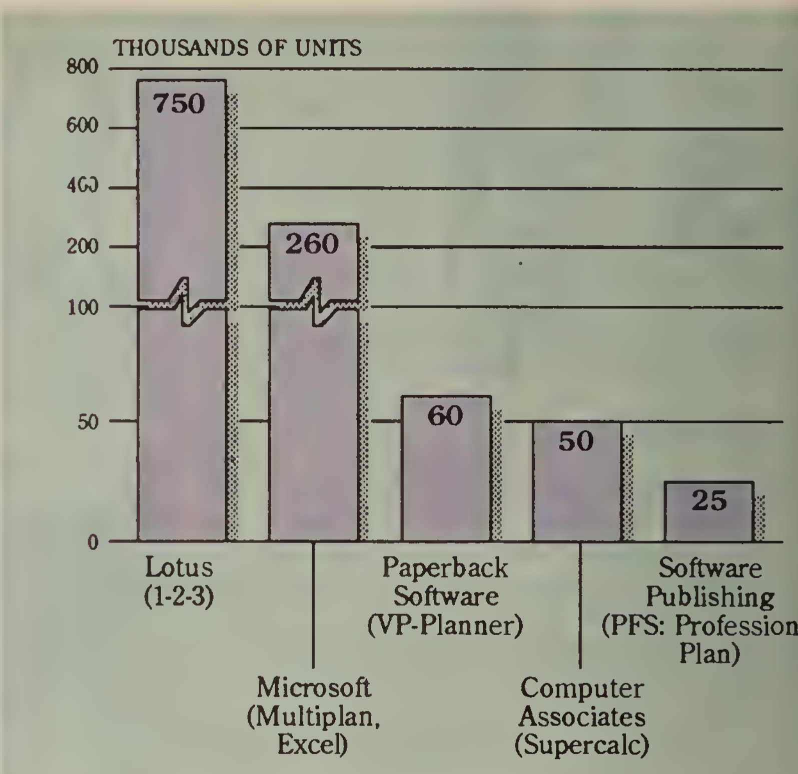
VP-Planner has been hobbled by poor marketing, a failing that positioned it as a Lotus clone and neglected its strong data base capability, explains Jeff Tarter, editor and publisher of "Softletter," a newsletter for software publishers. Now that Paperback Software has been hit with a lawsuit by Lotus, it must also work against the additional handicap of dealer and distributor wariness.

Peak performers

Top five producers of spreadsheet software, 1986 unit shipments



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Paperback Software recently released an enhanced product, VP-Planner Plus. This product offers almost twice as many logical and financial functions, is capable of recalculating selected cells and can work with Ashton-Tate Corp. Dbase files. But even with this improved offering, most industry observers count the company as an also-ran.

The key to Lotus's success with 1-2-3 is no secret. Riding the IBM PC wave, the company quickly reached the critical mass necessary to grow and thrive within the corporate environment. "You know how they say you can't go wrong buying IBM? Well, in spreadsheets, you can't go wrong buying Lotus," the former Lotus executive says.

The overwhelming penetration of 1-2-3 into the corporate computing environment means that corporate users maintain a substantial investment in the program that is difficult for challengers to overcome.

Most of the difference between the cost of the computer and the total cost of the machine over time lies in the cost of support and training. In the corporate world, that often means the cost of supporting and training users in 1-2-3.

Between the investment in training and support and the perceived value of the data, formulas and macros already created and stored in 1-2-3 files, many companies feel they have a substantial investment tied up in the package.

One by one

These factors are significant obstacles, Microsoft's Welt concedes, and the company does not expect Excel to precipitate a mass conversion. "Everyone won't rush to buy Excel," he says, "but individual power users will buy it at first. We see a growth curve similar to the Mac's."

Like Apple's Macintosh, a few copies of Excel will appear first on the desks of leading users, Welt suggests. Microsoft is counting on the program's advantages to become apparent in several years.

The results of an experiment at Alex Brown & Sons, Inc., a Baltimore-based investment company at which 1-2-3 is a beloved fixture, lend some credence to Welt's scenario.

"Lotus 1-2-3 is an elegant solution," says Ruthann Quindlen, a software analyst at Alex Brown. "By that I mean everybody can use it, from secretaries to executives, from beginners to advanced users. It is rare to find a program that serves both classes of users."

By comparison, she says, while Microsoft has always made feature-laden programs, they were "clunky, not elegant."

Quindlen says she expected more of the same when she received a copy of Excel with five disks and two 700-page manuals. She also expected problems because using graphics is new to most MS-DOS PC users. They must learn to use Microsoft Windows and a mouse before even beginning to use Excel.

Quindlen conducted an unscientific test, trying Excel out with 10 of the office's satisfied 1-2-3 users. After considering the results, Quindlen is ready to concede her assumptions were wrong.

After a week, she says, "they all wanted it." These 10 individuals were not looking for a replacement for 1-2-3, she explains. They were not even happy about having to become familiar with a new program. But once they did, she says, they were hooked.

Safety in tradition

Not only 1-2-3 investments but also innate purchasing conservatism will prevent corporations from readily making a switch.

"Corporations can't be on the bleeding edge. They want stability and compatibility. They like standards," says Priscilla Tate-Austin, assistant vice-president at Manufacturers Hanover Bank NA in New York.

At the same time, Tate-Austin adds, firms also want productivity from their investments and are not about to stand still if they are convinced a change of spreadsheet would bring real productivity benefits. Manufacturers Hanover, for example, is committed to upgrading to 386 machines, extra memory and Windows. As part of that upgrade, the company is adding Excel.

"We want the graphical interface," Tate-Austin says. "You've got to be impressed with what it can do, especially with forms, and forms are a really big thing to a bank."

Besides, the current challengers to 1-2-3 are chipping away at the objection that a switch to another spreadsheet means abandoning the investment in the previous spreadsheet — or at least reducing its value because of cumbersome file-transfer routines.

All 1-2-3 challengers promise to be able to handle virtually all of that spreadsheet's data, commands and macros with minimal effort. Because of 1-2-3's huge installed base and the perceived investment in the program, compatibility with that standard is virtually required if a challenger is to have any chance of success.

"If you can't import and export Lotus files and macros, you're in a lot of trouble," warns Tim Bajarin, executive vice-president of Creative Strategies Research International, Inc. a San Jose, Calif., market research firm.

The compatibility issue becomes particularly apparent when discussing macros. Macros are mini-programs created by the user that can be activated by a simple command. It was 1-2-3's sophisticated and powerful built-in macro capability that gave it a distinct advantage over its competition at the beginning and has been the program's source of unexpected strength.

When corporate computing experts talk about their organization's investment in 1-2-3, they are often referring to macros. "I use Lotus to develop turnkey systems," says Claude Blanc, a systems analyst at New York-based Matthew Bender & Co., a publishing house.

"We don't have a lot of computer-trained people, but I can use 1-2-3 to create customized applications that employees can run without training," Blanc says.

Matthew Bender's Blanc

Blanc says he would be willing to switch to another spreadsheet and is interested in Borland's Quattro — but with one proviso. "It must take the macros I have created and run them," he insists. No matter how attractive other Quattro features may be, if he has to rewrite macros, he says he will not switch.

"No one envisioned how successful macros would be. Lotus didn't see macros as a marketing advantage initially," the former Lotus executive says. The macro capability of 1-2-3 has, however, evolved far beyond its original purpose as a shortcut device to become a widely used programming language.

The market for macros

Because of these capabilities as a programming language, an entire industry — the third-party add-on and template marketers — quickly grew up around 1-2-3 macros, which helped drive the widespread acceptance of the spreadsheet. This industry creates products to be used in conjunction with 1-2-3. Add-on products are products written into the actual code of the program, while templates are products that lay on top of the program using macros.

> "IT IS not good for users for one company to hold such a dominant position."
>
> TED JASTREMSKI
> INTERNATIONAL
> DATA CORP.

"The third-party situation is a wonderful thing for Lotus. What a great way to market-research ideas," McGrath of "@Max" says. Lotus can encourage third-party vendors to develop products and then watch what products they come up with. If one catches on particularly well, Lotus can incorporate it into the program. This is what happened with Human Access Language, or HAL, the English-language user interface that Lotus acquired from GNP Development Corp., McGrath notes.

Lotus's Salim argues that Lotus's aim is not to use the third-party market as a test market. "They are an important factor in developing vertical and general applications," he says. This year, Lotus began providing software development tools for add-ons and is keeping larger developers updated on its own plans, he says; HAL was an exception. "The right spot [for add-on development] is with third parties," Salim insists.

The template marketers, which have been around since Visicalc was developed, own less of a stake in Lotus than the add-on developers, who must fit their product into the Lotus code. The templates are simply Lotus macros, and if the macros can be exported into a rival program, so can the templates.

For instance, Boston-based First Micro Group, Inc. markets templates to handle budgeting for the hotel and lodging industry. "We had templates for Visicalc that we dropped in 1983," says First Micro Group President Tod Riedel. The company immediately realized the potential of 1-2-3 and didn't hesitate to switch.

Now Riedel is considering versions of his templates for Excel for the Mac. Whether he also makes one for the PC implementation of Excel simply depends on whether there is any demand.

"It's not that hard. We just need a few customers to ask for it," he says. Riedel says he has no great loyalty to Lotus, although his products are built around 1-2-3.

The more brands there are, the better the attitude among major users, according to Ted Jastremski, director of software and services research at IDC. Despite its penetration of the corporate environment — or maybe because of it — corporate users and buyers are voicing a growing resentment toward Lotus, a company often characterized as arrogant. Large corporate users are upset with its pricing policies.

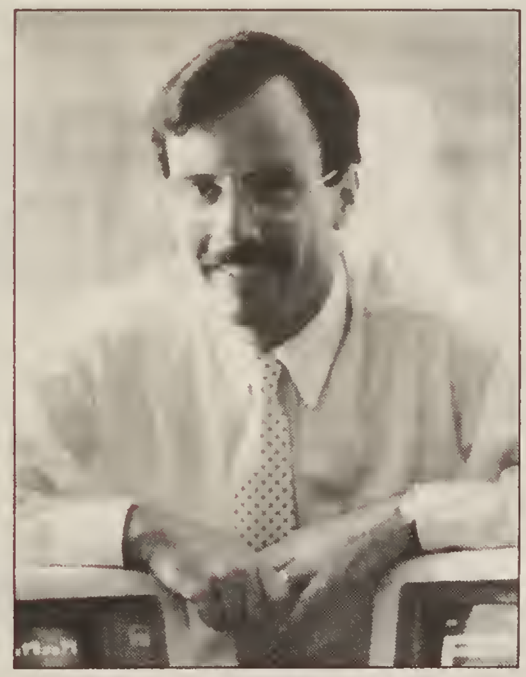
"As I talk with large users, I get a strong sense they think it is to their advantage to have more choice," Jastremski says. "It is not good for users for one company to hold such a dominant position." Large corporate users are hoping, he says, that Excel will "break the hammerlock" Lotus has on the spreadsheet market.

New look, new uses

The spreadsheet has changed dramatically in the years since Visicalc's initial versions, and so have the ways people use them. Originally, the spreadsheet was a simple network of cells laid out in rows and columns. The early ones were small in size, had limited text capabilities and offered only the most rudimentary features. They were used essentially for financial planning and budgeting and elementary modeling.

Very quickly, however, users took over spreadsheets and began to use the programs in their own ways. Today, users have virtually turned Lotus into the all-in-one program for which many software developers have been searching. These people use Lotus as a data base and even a word processor or a memo writer as well as a spreadsheet.

"Spreadsheets have grown into the front end for everything else," Alex Brown's Quindlen says. People did not want the all-in-one packages because they were too limited, or one or another of the applications would be weak, she explains. Instead, users wanted a core product into which they could import text, graphics or anything else they needed.



First Micro's Riedel

That core product turned out to be the spreadsheet. Rather than think of it in terms of a budgeting tool — a view that constricts the use of the spreadsheet — users realized that a spreadsheet is nothing more than a collection of cells, "each one a little container into which you can insert numbers or text," Quindlen explains. Users found they could do a wide variety of things simply by fooling around with what they put in each little container and how they linked them together.

With the sheer power of today's machines, spreadsheets can run to thousands of rows and columns. The coming ones will be even larger. Three-dimensional spreadsheets, such as Boeing Computer Services' Boeing Calc, not only control rows and columns but create pages by stacking spreadsheets on top of each other.

Macros can be linked in such a way as to create massive programs within themselves. For example, Welt describes an accounting firm that created a 400K-byte macro using 1-2-3 to handle LIFO to FIFO (last in/first out, first in/first out) inventory accounting conversions.

"The spreadsheet has become a metaphor. It is the first program with the potential to allow people to define their own applications," says Surpass Software's Rubinstein, founder of Micropro, the creator of Wordstar and developer of Surpass, another of the new generation of spreadsheets.

New kids on the block

Excel for the PC, which began shipping in November, is the most dramatic of the new programs and presents as different a way of doing things as possible without abandoning the essential spreadsheet metaphor. Its distinction comes from being designed specifically for the Windows-OS/2-Presentation Manager platform — much like 1-2-3, a generation earlier, differed from its predecessors because it was designed specifically for DOS.

Microsoft is counting on the graphics-based approach of IBM's PS/2 line to become the business standard and for Excel to be the product for that standard.

"It's clear to us that that's the direction. It may take a couple of years, but that is where things are going," Microsoft's Welt says.

"Excel blows you away with what you can do with graphics, including multiple fonts on-screen. They can reproduce an entire 1040 [tax] form," McGrath says.

Excel succeeded in the Macintosh graphics-based market. Excel for the Mac "is the 1-2-3 of the Mac world," with 135,000 sold in 1986, says John Wardley, senior analyst of Macintosh research at IDC. Meanwhile, Lotus's efforts in that market, notably Jazz, floundered.

"Jazz tried to do too many things on too small a machine — the early Mac — and did none well," Wardley says. Modern Jazz is an improvement, but it is too little too late. In a barely disguised attempt to divert attention away from Excel for the PC, Lotus announced 1-2-3 for the

Mac long before anyone will see it. Wardley says he does not expect to see 1-2-3 for the Mac until late 1988 at the earliest.

In return for straying from the Lotus standard, Excel provides substantial capabilities. "It has a lot of built-in features that you have to use add-on products for with Lotus," says Eloy A. Quirindongo, a New York-based consultant who specializes in 1-2-3 training and applications. Among these capabilities are superior graphics, faster speed, preview screens for ease of outputting and better screen control, he notes.

Quirindongo says he is not concerned about compatibility problems. "Excel can use all Lotus files and translate about 90% of the macros. And, the Excel [macro] language is so vast, you can do much more with it," he says.

While most interest is on Excel, other spreadsheet products are worth noting.

"We see the spreadsheet market in terms of four products: Excel, Quattro, Surpass and 1-2-3 Release 3.0," Creative Strategies' Bajarin says. He says he does not expect any of the products to knock 1-2-3 off the shelves in the short term, but the market is ready for change.

Quattro, at $195, is less expensive than 1-2-3 and offers more power, more capabilities and compatibility with 1-2-3, Bajarin notes. In addition, it offers substantial customization capabilities, so users can make it look and act like Lotus or let it be something different.

"Quattro will appeal to somebody who doesn't want to spend $495 but wants a solid name and product, a high degree of [1-2-3] compatibility and some new features," says Michael Goulde, a senior analyst at The Yankee Group in Boston.

Surpass is aimed at existing 1-2-3 users who have reached the limit on what they can do with the Lotus product. Using careful phrasing to avoid describing a Lotus clone, Rubinstein says of Surpass, "We have a subset that implements 100% of all [1-2-3] keystrokes, macros, formulas and files."

Alex Brown's Quindlen

With Surpass, the company has tried to advance spreadsheet functionality while maintaining allegiance to the Lotus standard. "We have eliminated the conversion pains, both human and hardware," Rubinstein maintains.

What Surpass Software has ended up with is an enhanced version of 1-2-3 that can handle multiple spreadsheets and stack them in a three-dimensional array. Surpass does not need to have a spreadsheet in memory to refer to it, only to view it. It also makes full use of the graphical interface and allows users to do disk-buffering for extra-large spreadsheets.

The little kids

Supercalc4, Multiplan and a variety of Lotus clones also hold small portions of the market. There are also specialized products, such as Javelin Software Corp.'s Javelin, which many do not consider a spreadsheet at all; TM/1 from North Bergen N.J.-based Sinper Corp. and Boeing Calc, which represent multidimensional spreadsheets; and even integrated products such as Lotus's Symphony.

At best, industry analysts see these products carving out a niche for themselves and holding onto it. For instance, Javelin recently sold its 50,000th copy, and a large proportion of Boeing Calc's sales are to Boeing itself, according to Michael Pearce, general manager of Seattle-based Boeing's micro software products group. These are specialized market segments compared with the leading products.

Boeing Calc is aiming for the top 20% of the spreadsheet market — that is, power users willing to make some sacrifices in speed for gains in computing horsepower and easy, multidimensional capabilities, Pearce says.

Cambridge, Mass.-based Javelin reports that it already offers some of the features being touted in the new products, such as linked spreadsheets, pull-down menus and multidimensional views. But the product lacks the conventional format at its core. "We're not a spreadsheet; we're an analytic tool," says Bob Weissman, Javelin's director of sales and marketing.

> **A**NALYSTS anticipate a battle of titans over the leading position in the spreadsheet market for the next generation of hardware.

As an analytic tool, the product has slowly been winning acceptance in corporations, but some analysts feel it may be too late. "[Javelin's] fatal flaw is that they originally positioned it as a spreadsheet. It's really modeling software, not a spreadsheet. It's been on the market for three years, but now it is pretty much matched by Excel," The Yankee Group's Goulde says.

Answering volleys

Lotus has countered all of this new activity with announcements of 1-2-3 for the Mac and a new release of 1-2-3. Release 3.0 will be a "dramatically incremental advance," Lotus's Salim says. It will remain compatible with its existing user base while capitalizing on the recent technological advances, he suggests.

The new release will address most users' technical complaints with the current version, such as auditing, color graphics and macro recording. Neither the new release nor the Mac version will be available for several months, however, and Lotus seems to be saying it will adopt a response mode for future developments.

As new operating systems are put into use, Lotus has promised to provide appropriate releases, including a graphical interface version and a multiuser version. When connectivity becomes a larger issue, the company is prepared to move 1-2-3 from the desktop to the minicomputer and mainframe environment.

Lotus is in the enviable position of being able to watch which way trends lead rather than having to gamble on a direction and race to be there first. "We think there will be a slow and gradual change, and we will exploit the new technologies when it makes sense," Salim says.

Such a strategy may appear safe, but some rivals think Lotus will lag behind. "We had Surpass in development for four years," Rubinstein says. "It doesn't matter how much money you have or how smart you are, developing a program like this takes time. Lotus is far behind."

Lotus may be slow in moving to the new technology, but nobody is suggesting it has lost its edge. Analysts and industry observers see a battle shaping between Lotus and Microsoft for dominance in the spreadsheet market of the future, with other players grabbing narrow niche markets or dropping out.

Analysts anticipate what amounts to a battle of titans over the leading position in the spreadsheet market for the next generation of hardware. On one side is Lotus, already holding the undisputed position as keeper of the industry standard and developer of the leading application program, with a huge installed base, proven skill in the spreadsheet market and strong financial resources.

The other titan is Microsoft, which can claim development of the leading software product, MS-DOS. Well connected to new hardware products through its role in developing OS/2, Microsoft holds a strong lead in the graphical environment with its work with the Mac and Windows. The company also has significant technical and financial resources of its own.

The battle will be waged not only with technology, technical features and specifications but also with all-out marketing warfare. "We are committed to this. We are giving Excel the largest advertising budget we ever gave a product. Still, Lotus outguns us," Microsoft's Welt says. This fall, Lotus launched an advertising campaign with a $500,000, one-time, 14-page insert in *Time* and other publications.

With that kind of effort raging around them, the smaller spreadsheet marketers will have to stay out of the line of fire. "I don't know how the smaller companies will compete," says Welt, who feels that, even with all Microsoft's resources, his company is at a disadvantage. "In Manhattan, I have one salesman. Lotus has 45."

It is possible that no single company will dominate the market of the future the way Lotus has in the past. "Excel is a hell of a program. It will change the way people think, but it won't overturn 1-2-3," McGrath says. If Excel shows any sign of success, the next version of 1-2-3 will be very Excel-like without being incompatible with itself, he predicts. "Lotus may be arrogant, but it isn't dumb."

As is often true with races, the real winners may be on the sidelines. In the coming months, users will be treated to a wealth of new products and new features. •

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INTERVIEW
WEIGHING THE CURRENT CROP

At 36, Dan Bricklin is the grand old man of personal computer spreadsheets. Ten years ago, he conceived and developed the idea of Visicalc, with Bob Frankson writing the code. A year later, they shipped the first copies, designed to run on a 32K-byte Apple Computer, Inc. Apple II. Software Arts, Inc., the company Bricklin and Frankson created around Visicalc, also produced and marketed an equation processing program called TK Solver. The assets of that company, including TK Solver, were purchased by Lotus Development Corp., which eventually sold off portions of them. What remains of Software Arts exists now as SAPC, Inc., an entity in which Bricklin remains a nominal stockholder.

Today, Bricklin is president of Software Garden, Inc. in Newton, Mass., a company he created to market his Demo II program, which aids in creating demo disks. He spoke recently with free-lance writer Alan Radding about the expanding field of spreadsheet contenders.

Spreadsheets started as simple budgeting or financial tools. Now they seem to be almost all-in-one products.

The basic idea was always that the spreadsheet would be in the middle, and there would be add-on products around it. All a spreadsheet really is is a grid of cells. Each cell is a little calculator, really a simple computer with a supervisor. You put in words and numbers and formulas and you get out strings. None of that has really changed.

If Lotus didn't do anything radically different, why have they been so successful?

They knew when to be different and when not to be. Other spreadsheets tried to be different just to be different, but Lotus said, 'Let's not be different except when it means being better.' That, combined with the right people, the right image, perfect timing, good code, a lot of luck and very hard work were what did it.

How important do you think macros have been in the success of 1-2-3?

Macros are very important, very helpful. They had been used in editors. Lotus did not invent spreadsheet macros. The original Visicalc took macros, although nobody could use them very well. So did Supercalc. The hardware limitations made it too difficult. With more memory and a hard disk drive, you could do a better job.

A lot of people attribute much of Lotus's success to the add-on products.

We had add-ons, like Visiplot, but we had to run them as separate programs because of the memory limitations. We even had an enhanced version of Visicalc that provided for simple consolidations. Lotus didn't invent add-ons.

What's happening now? Why are there so many new spreadsheets on the market?

Things are changing. The technology is changing. Change is coming that will affect the way we use computers.

If you can guess which of all the changes is going to be the critical change — whether it is the hard disk, more memory, high resolution — you can have a winner. The problem is that you don't know which change is the crucial one until it has come and passed.

What do you think the chances are for a product like Excel?

Excel is sexy looking. Microsoft positioned it as a quantum leap — not the next step but a whole new thing. Because of all the changes going on, this is a good time for Excel. Users are going to think that with it they'll get desktop publishing, too.

Any thoughts on Quattro?

I don't follow this stuff as closely as I used to, but Quattro is evolutionarily better than 1-2-3 at a reasonable price. It will offer a counterimage to Lotus for people who don't want to go along with the mainstream. And, it is coming from a company you know and can trust.

Some people think Surpass is a great product and a real sleeper.

Surpass might have trouble because it assumes users already know 1-2-3. But users will discover that they will still have to learn new features to use the new stuff in Surpass. All Surpass Software can say to users is, 'Trust us, because we brought you Wordstar.'

Who's going to win?

People are willing to put up with a lot to stick with their old tools, pushing the products beyond their intended applications. But sooner or later they must think about switching.

People can't tell about software by reading about it, so the big battle is to get people to try it. That's what will make the difference. People will switch if you don't make it too hard.

It sounds like you think Lotus's time is passing.

Lotus won't go away. What happened in word processing will happen in spreadsheets. There will be a constant tussle. We're not talking about six-month victories. We're talking about two- or three-year victories.

Are there any particular features or innovations in this new bunch of spreadsheets that are really exciting?

What I'm seeing, as we get bigger machines, is that all the features we knew should be there but lacked the memory to implement are all being put in.

Now we're getting the kind of quality [of output] that used to come from the graphics department. There are lots of people who couldn't care about that, but to some people, presentation makes all the difference in the world.

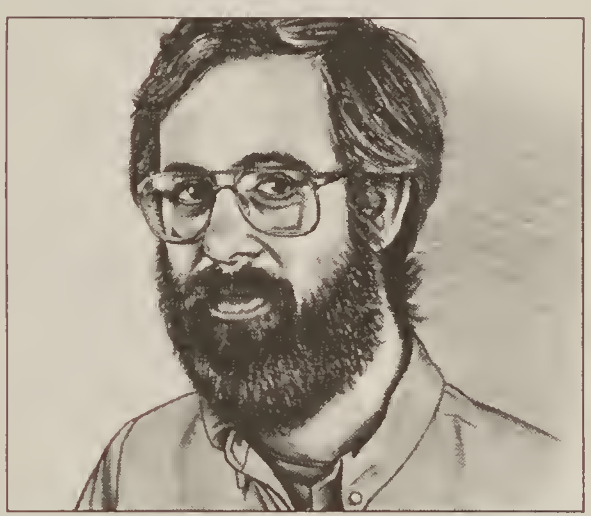
What do you think will separate the winners from the losers among these new programs?

Microsoft made the right move. The [Intel 80386] machines are starting to sell in quantity right now. The price [of the program] is so low compared with the price of the machine that people are sure to buy it. And you only need one person in the office to know [the program] well for it to catch on.

Is it going to be a technology battle or a marketing battle? Will the biggest ad budget win?

It will be a combination. Good code pushes the machine to the limit. 1-2-3 pushed the machine pretty far. There were programs with more features than 1-2-3 that didn't make it because they were performance-bound.

You also need marketing, not glitzy advertising, but marketing in the broad sense of the word. People have to feel that this program is the one.



Dan Bricklin

ALAN WITSCHONKE

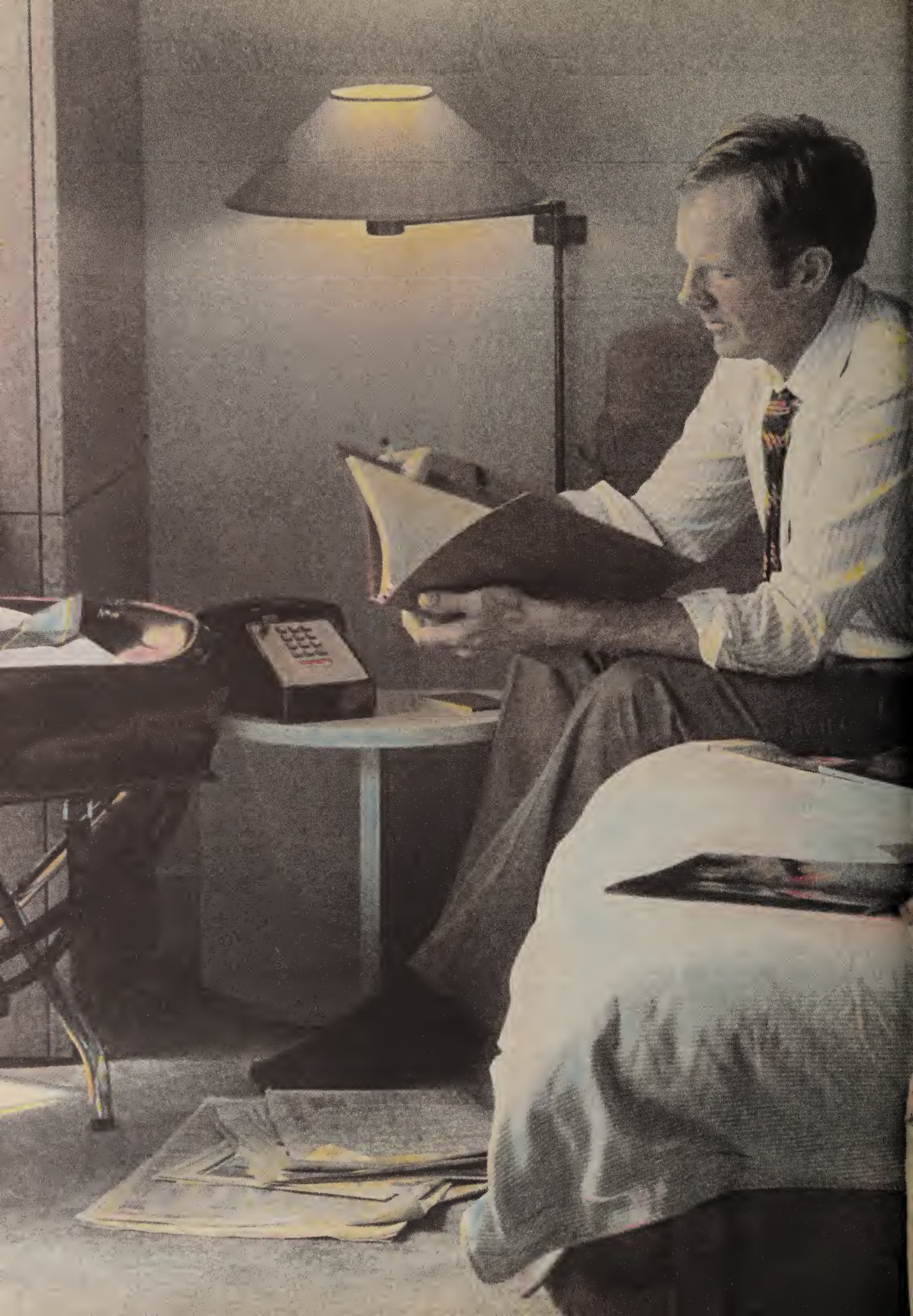
How important is multidimensionality?

Linking spreadsheets is very useful to a lot of people. The question I have is whether this is the best way.

It looks like the graphical interface is the wave of the future. Will we all be rolling mice around on our desks within the next few years?

The graphical interface is here to stay. It's useful for many types of applications but not all. A lot of it has to do with the screen.

An icon takes up less space on the screen, so you can put more information on-screen. Pull-down menus are a way to get more information out of a limited amount of space. When you're just typing in numbers, you only want to type and hit the return or tab. But when you're doing other things, such as positioning, you keep your hand on the mouse all the time. ●



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Corporations cannot live by PC spreadsheets alone

BY SUSAN MESSENHEIMER

Microcomputer-based software products played a major role in introducing the widespread use of computerized spreadsheets and created a hearty appetite for computerized information from many sources. But personal computer-based software offerings by themselves cannot satisfy that growing hunger.

The need for gateways between corporate data bases, departmental systems and users — and for spreadsheet software that allows data to pass through those gateways with ease — has become vital to the user community.

Vendors of spreadsheets for high-end systems believe they can meet these end-user demands by enhancing their existing products and developing new ones that include features such as data sharing and portability, increased functionality, friendly user interfaces and integration with other applications

According to Edward T. Spire, president of Dynasoft Corp., the developer of Dynaplan spreadsheet software for IBM mainframes,"PCs are limited by link software and even local-area networks are limited to a single location and present an additional level of complexity." Many high-end spreadsheet offerings, he adds, allow users to bypass this step entirely.

Several mainframe spreadsheet programs, such as Computer Associates International, Inc.'s Supercalc/MF, offer menu-driven access to files and data bases as well as PC spreadsheet interfaces for uploading and downloading files.

Access Technology, Inc., meanwhile, emphasizes portability. It offers compatible micro, mini and mainframe versions of its 20/20 product so that entire spreadsheet models can be shared across hardware types and operating systems.

Feeding the need

When it comes to functionality, the high-end spreadsheets offer several capabilities that their micro counterparts either do not offer or provide in a very limited sense, such as multiple spreadsheets, three-dimensional models and trigonometric and financial functions.

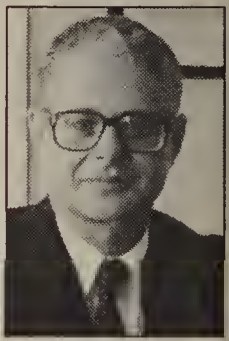
The power available on the mainframe was what led Mervyn's, a Hayward, Calif.-based department store chain, to select Dynasoft's Dynaplan for its IBM 3081 running MVS/TSO.

"The available PC software packages were too limited in size and functionality to handle the massive volumes of data generated by our organization," says Irene Blumenkranz, Mervyn's information center manager. "A mainframe-based system provided the capability for large spreadsheet applications and promoted information sharing."

Spire

High-end spreadsheet vendors are caught on the horns of a user interface dilemma. Most personal computer-based spreadsheets use message prompt-based interfaces rather than menus. This highly interactive technique requires too much system overhead in a multiuser environment. But many users are adjusted to prompting and resist learning new commands.

High-end spreadsheet vendors hope to circumvent this issue by offering PC-like interfaces. Dynaplan, for example, uses pop-up menus. Other packages, such as Sterling Software, Inc.'s Dylcalc, use menu-driven commands similar to those of micro-based packages.



Kluchman

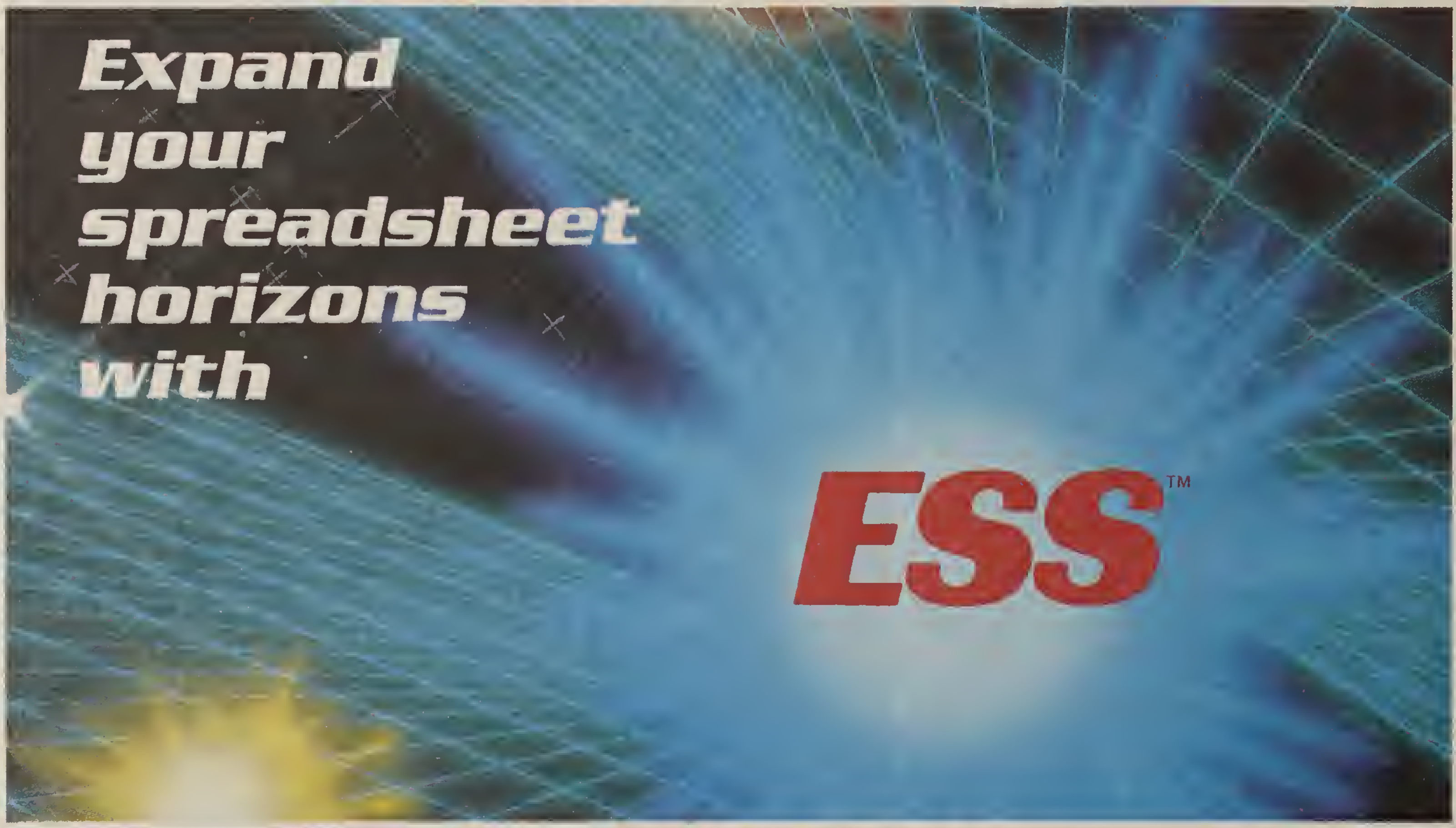
Another challenge for mainframe spreadsheets is contending with the fact that while a PC spreadsheet can be a just a spreadsheet and still survive, expectations are greater for products in a shared environment.

"In a multiuser environment," says Alan Kluchman, president and chief executive officer of Access Technology, "the spreadsheet is a secondary companion to other applications."

As often as not, individuals working with spreadsheets need to use other types of application software. For that reason, a number of products integrate applications using the spreadsheet as the core.

Of course, if software is already available to users in the form of a departmental computing system, it makes sense to provide links between the departmental system, other sorts of corporate software and end-user spreadsheets. This integration of software resources takes advantage of the corporate investment. •

Messenheimer is an independent consultant and writer based in Natick, Mass.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PRODUCT FACE-OFF

Quattro and Excel: Horses of different colors on 1-2-3's track

BY SHAWN BRYAN

The life cycle of a software category generally has three stages. First, a popular package is cloned, with the rivals often indistinguishable from the original. The next stage is the release of programs that look like the original but promise to do more and, often, to do it faster. The final stage comes when manufacturers decide to break with conformity in favor of originality, value and improvement.

In the spreadsheet category, Borland International's Quattro qualifies as a Stage Two product, since it adheres to the model of Lotus Development Corp.'s 1-2-3 but offers some real enhancements to the original.

Microsoft Corp.'s Excel, on the other hand, is a definite Stage Three product. It completely discards the 1-2-3 format and offers a new way of doing spreadsheets for those willing to invest in an Intel Corp. 80386- or 80286-based machine, which its software requires.

Quattro competes directly with 1-2-3 in both price and performance. Its suggested list price is $195, compared with $495 for 1-2-3.

Quattro moves somewhat more crisply through calculations than 1-2-3. It is particularly efficient for large jobs because it recalculates only the cells that need to be computed rather than the entire sheet, as is the case with 1-2-3.

QUATTRO'S attractive feature is its ability to print graphs from within the spreadsheet program. . . . You don't have to reload both the spreadsheet program and the data to replot the graph.

Graphic distinctions

When it comes to graphics, there is no question that Quattro offers more graph types and ones that are closer to presentation style than the Spartan variety obtainable with the current release of 1-2-3.

Where 1-2-3 offers a bar chart, Quattro offers vertical and horizontal bars, three-dimensional bars and line and bar combinations, as well as area line, scatter and pie charts. In all cases, Quattro's styling, printing and screen presentation options are richer and more varied.

Perhaps the most attractive feature, however, is Quattro's ability to print graphs from within the spreadsheet program.

With Quattro, if you forget a title or a formatting option, you don't have to reload both the spreadsheet program and the data to replot the graph. You can get around the process in 1-2-3 by exiting to DOS while leaving the spreadsheet in memory, but that is a make-do measure rather than a good solution.

Because it is a new product, Quattro makes good use of the hardware innovations that have come along since 1-2-3's release. Although it has been updated many times, 1-2-3 still does not really take advantage of the IBM Video Graphics Array (VGA) and Enhanced Graphics Adapter screens now available; Quattro does.

In addition, Quattro is not copy protected, which makes installation a breeze.

You do need a minimum of 512K bytes of memory to use Quattro, but that can hardly be seen as a limitation in these days of multimegabyte computers. Besides, the program can work with both the Lotus/Intel/Microsoft Expanded Memory Specification (EMS) and Enhanced EMS cards.

Quattro offers file compatibility with a number of other products. So does 1-2-3 — but only through the File Translate utility. To save a Quattro spreadsheet in the 1-2-3 format, you simply name the file with the 1-2-3 file extension. Quattro automatically saves the file in the appropriate format. The same holds true for Ansa Software's Paradox and Ashton-Tate Corp.'s Dbase files.

Macros are significantly improved in Quattro. First, Quattro has a macro recorder that allows you to record keystrokes. Second, and more significant, Quattro's single-step debugger allows you to play a macro one command at a time.

Brand new hue

Microsoft's Excel for the IBM Personal Computer is a horse of a decidedly different color. It is as much an operating system and philosophy as it is a spreadsheet product.

What Excel does is bring the Apple Computer, Inc. Macintosh computing approach to the IBM environment. On the Mac, the visual interface is consistent, and various actions are used consistently by all of the products. It was in this environment that Microsoft conceived Excel. In its transition to the IBM environment, Excel has not lost touch with its roots.

EXCEL DOES windows as windows are meant to be done. Unlike the split-screen function other spreadsheets call windowing, Excel allows multiple sheets on the screen at one time in different windows.

Excel actually runs under the Microsoft Windows operating environment. When you copy the program to your computer, you are copying a run-time version of Windows as well as the Excel software.

If you want to modify the Windows environment, you must purchase a copy of Windows along with Excel.

Excel does windows as windows are meant to be done. Unlike the split-screen function that other spreadsheets call windowing, Excel actually allows multiple sheets on the screen at one time in different windows, each of which can be sized and located on the screen.

You can stack multiple windows, or you can lay several sheets side by side so they are visible at the same time. You can expand and contract windows with a single command. You can have graph windows and text windows on the screen at the same time. You can activate a spreadsheet and its graph at the same time and watch the graph change as you change numbers on the sheet.

Windows is a feature that requires some exploration, but it offers tremendous versatility, especially when working with more than one program.

Excel is a large program. It comes standard on a high-density, 1.2M-byte floppy and 3½-in. disks, although 360K-byte floppy-disk copies can be ordered. Excel requires a hard disk and an EGA, VGA or compatible monitor. Excel also requires a great deal of memory; a good place to start is 2M bytes, although Microsoft says you can run it with 640K bytes.

You should have an 80286- or 80386-based machine to run Excel at top form. An old 6-MHz IBM PC AT is marginally acceptable, but Excel does not perform with much speed on the slower machines. This is not to say the speed is unacceptable. It's just clear that a lot is going on under the surface that you never see.

What is going on is a lot of screen handling, because Excel is a graphics-based rather than text-based program. The entire screen is a palette on which you can write, format and display data. Multiple fonts and colors can be viewed on-screen as they will appear on paper.

The higher the screen resolution, the better Excel appears. A NEC Corp. Multisynch-type monitor makes Excel look pretty good, but the spreadsheet program is spectacular on a VGA monitor. As you might expect, the graphics capabilities of Excel are a strong suit.

The graphs in Excel are closer to presentation quality than to analytical quality. There isn't much you can't do with Excel when it comes to graphs. Excel's data base characteristics are closer to true data base power than most spreadsheets and, by using the program's form creation capabilities, you can make data entry forms that look like data entry forms.

Furthermore, an application's pull-down menus and dialogue boxes can be custom-tailored to make it completely menu-driven, hiding the underlying spreadsheet application from the user.

One facet of Excel that deserves attention is its openness to customization. Excel comes with numerous built-in or standard formats for controlling the way numbers and data appear in a spreadsheet. Almost everything about Excel can be modified to work in a way that suits the user.

The ability to link

Excel borrows from Microsoft's Multiplan in its ability to link spreadsheets. You can build huge models in Excel (theoretically 256 columns by 16,384 rows).

However, because you can link sheets together, you may be tempted to make them smaller and more manageable. In fact, the ability to link spreadsheets, combined with another Excel feature that allows the attaching of notes to individual cells, could greatly increase the quality of decision making.

The notes view of a cell tells you its location, describes the formula and value assigned to the cell, lists the precedents and dependents and provides room for explanatory text.

Like Quattro, Excel takes macros very seriously and provides a full programming environment in which to work. More than 350 macro commands are available in Excel, stored in macro sheets so they can be used in multiple applications. You can step through macros to debug them, and you can insert controls to halt executing macros as you are working with them.

Excel also provides a keystroke capture mode that records normal activity in the spreadsheet and stores it as a macro.

Macros from 1-2-3 are automatically translated to Excel when you import a 1-2-3 spreadsheet, so previous work on application automation won't be lost.

On 1-2-3 turf

There's no question that Microsoft carefully considered the matter of 1-2-3's installed base when designing Excel. Not surprisingly, Excel can read and write in 1-2-3 file format.

What's more interesting is the fact that, while officially encouraging the use of the ALT key to bring up the menu bar, Excel uses and recognizes the / key as another way to call the menu bar.

Those used to copying the 1-2-3 way need to take a different approach when using Excel. First, Excel expects you to designate ranges to work with before you designate the action you wish to take.

Although this sounds more cumbersome, Excel provides an array feature that eliminates many copy requests and saves memory at the same time. An array is a formula in one cell that extends its influence to other cells.

You don't need Excel to do financial modeling, large spreadsheets or any one of a hundred other spreadsheet jobs.

But it makes sense if you work in a mixed Apple-IBM hardware environment since it is possible, using the Sylk file-transfer language, to move spreadsheets between the Mac and the IBM versions of Excel. Excel is also a good choice for those who make presentations with numbers that require real polish, those who need to integrate lots of text and numbers or those who are committed to moving into the Windows environment.

Both Quattro and Excel have the style and finesse to rival or replace 1-2-3. For that reason, they are both worth a look. •

Bryan is vice-president of finance and administration for Cabot Farmers' Cooperative Co. in Cabot, Vt.

Spreadsheets

COMPANY	PRODUCT	HARDWARE	MEMORY REQUIREMENT (IN BYTES)	RECALCULATES SELECTED CELLS	NUMBER OF MATH FUNCTIONS	NUMBER OF LOGICAL FUNCTIONS	NUMBER OF FINANCIAL FUNCTIONS	NUMBER OF STATISTICAL DATA BASE FUNCTIONS	MATRIX SIZE (ROW X COLUMN X DEPTH)	EXTRACTS AND COMBINES FILES	LINKS WITH OTHER SPREADSHEETS	SPARSE MATRIX STORAGE	INTERNAL GRAPHICS	LEVEL OF GRAPHICS (PRESENTATION- OR WORK-QUALITY)	READ/WRITE COMPATIBILITIES	PRICE
Access Technology, Inc. **(617) 655-9191**	20/20	IBM PC, AT, XT and compatibles, VM CMS machines; DEC VAX, Rainbow, Professional; Sun III workstations; AT&T 3B2 series; DG Eclipse MV; Wang VS and PC; Altos machines; Prime; NCR Tower	512K on MS-DOS	No	17	5	10	5	1,000 x 8,192	Yes	Yes	Yes	Yes	Work-quality	1-2-3, Excel	$500-$18,800
ARTSCI, Inc. **(818) 985-2922**	Magicalc	Apple II, IIe, IIc	64K	No	40	6	5	0	64 x 256	Yes	No	No	No	None	DIF files	$99.95
Ashton-Tate Corp. **(213) 329-8000**	Framework II Version 1.1	IBM PC, XT, AT, PS/2 and compatibles	384K	No	21	14	6	7	32,000 x 32,000	Yes	Yes	Yes	Yes	Presentation-quality	Dbase III Plus, Displaywrite, Wordperfect, Wordstar, Visicalc DIF, Wang, Multimate, ASCII files	$695
Borland International **(408) 438-8400**	Quattro	IBM PC, XT, AT, PS/2 and compatibles	512K	Yes	19	7	11	7	8,192 x 256	Yes	No	Yes	Yes	Presentation-quality	1-2-3 Version 1 and 2, Symphony; Dbase; Paradox; Reflex	$195
Bravo Technologies, Inc. **(415) 841-8552**	Maccalc	Mac 512K, 512E, Plus, SE, Mac II	512K	Yes	28	10	6	13	125 x 999	Yes	No	No	No	Presentation-quality	WKS and Sylk files	$139
Carolian Systems International, Inc. **(416) 673-0400**	Calc1	HP 3000	—	Yes	20	10	8	8	2,048 x 63	Yes	Yes	Yes	No	None	1-2-3, Visicalc, Peachcalc	$4,000
Century Analysis, Inc. **(415) 680-7800**	Plan/Graph	DEC 4.2; CDC NOS/VE; IBM PC, XT, AT, PS/2 and compatibles; Unix machines	256K	Yes	50 to 60	—	—	—	To 1M cells	Yes	Yes	Yes	Yes	Work-quality	DIF, Sylk files	From $595
Comprog, Inc. **(818) 848-1321**	Math/1000	HP 1000 series	60K	Yes	30 to 40	—	4	5	510 x 78	Yes	Yes	Yes	No	None	—	$595
Computer Associates International, Inc. **(408) 432-1727**	Supercalc4 Version 1.1	IBM PC, XT, AT, PC Convertible, PS/2 and compatibles	256K RAM	No	16	18	20	15	255 x 9,999	Yes	No	Yes	Yes	Presentation-quality	1-2-3, Visicalc, DIF, CSV, ASCII files	$495
	Supercalc/MF	MVS/TSO, MVS/XA, MVS/XA/ CICS, VM/CMS, PGM machines	1M	Yes	48	49	20	17	9,999 x 702 x 1,000	Yes	Yes	Yes	Yes	Either	1-2-3, Symphony, Visicalc; Supercalc4; DB2; Focus; SQL/DS; sequential and VSAM files	Information not provided
Computer Methods Ltd. **(818) 884-2000**	XUD	Unix machines	2M	Yes	20+	25+	25+	25+	18,000 x 999	Yes	Yes	Yes	Yes	Presentation-quality	Unix editors	From $250
Computer Technology Systems, Inc. **(303) 663-1400**	Mastercalc	Iris machines	128K	No	20	8	3	0	52 x 999	Yes	No	Yes	No	None	None	$900
Cullinet Software, Inc. **(617) 329-7700**	Goldengate	IBM PC, XT, AT, PS/2 and compatibles	384K	Yes	20	5	6	15	2,048 x 256	Yes	No	Yes	Yes	Presentation-quality	Dbase II, III, III+; 1-2-3 and Symphony; any ASCII or DIF files	$695
Datamate Co. **(918) 664-7276**	Easycalc	NCR Tower series, NCR 9300 running ITX, 9400, 9500	30K	Yes	12	6	0	0	1,960 cells	Yes	Yes	No	No	None	None	$495
Data Tailor, Inc. **(817) 921-6083**	Trapeze	Macintosh	512K with 800K-byte external drive	Yes	8	27	8	144	429, 470, 512 cells	Yes	No	Yes	Yes	Presentation-quality	WKS files	$395
Decision Line Ltd. **(717) 894-4111**	Proforma	Decsystem 10 and 20; HP 3000; IBM 370, 3080, 3090 series; Amdahl machines; Honeywell 6000 Gecos; Sigma 6, 9	From 1M	Yes	25	—	12	—	To 2,000 x 2,000	Yes	Yes	Yes	No	None	Intermediate ASCII files	$12,500 (one time license)
DSD Corp. **(206) 485-7564**	C-Calc Plus	DEC VAX, Sun and Apollo workstations, HP 9000, Pyramid	512K	Yes	20	8	15	22	1,024 x 64,000	Yes	Yes	Yes	Yes	Presentation-quality	Lotus, ASCII files	$1,000-$10,000
	C-Calc	DEC PDP series, Pro 350 series; Sequent; Elxsi; NCR Tower	512K	Yes	12	1	4	6	—	Yes	Yes	Yes	Yes	Presentation-quality	ASCII files	$500-$7,500
Dynacomp, Inc. **(716) 265-4040**	Dynamaster Database	IBM PC, XT, AT, PS/2	128K	Yes	—	—	—	—	—	Yes	Yes	Yes	No	None	ASCII files	$99.95
EDC Software, Inc. **(617) 749-1794**	Impact Decision Support Systems	Wang VS	1M	Yes	20	40	100+	140+	—	Yes	Yes	Yes	Yes	Presentation-quality	1-2-3, Wang WP, Pace, 20/20, Focus, SPSS	$5,000-$25,000
Finar Systems Ltd. **(713) 664-1172**	Finar	DEC VAX/VMS, IBM PC and compatibles	256K	Yes	7	8	18	8	32,765 x 32,765	Yes	Yes	No	Yes	Work-quality	ASCII files	$980-$9,800
Garrison Software, Inc. **(800) 368-4555**	Boeing Calc	IBM XT, AT and compatibles	512K, 640K	Yes	17	7	14	7	60,000 cells	NA	Yes	Yes	Optional	Presentation-quality	1-2-3 Versions 1 and 2; ASCII, DIF, Sylk files	Information not provided
Grid Systems Corp. **(415) 656-4700**	Grid Analytical Tools Software	MS-DOS or Integrid machines	512K	Yes	6	6	6	6	9,999 x 256	Yes	Yes	Yes (RAM only)	Yes	Presentation-quality	Dbase II, 1-2-3 Version 1A	$350
Handle Technologies, Inc. **(214) 484-1415**	Handle Calc	AT&T 3B2 series, NCR Tower, systems running SCO Xenix and Microport Unix	512K	Yes	28	14	2	4	32,000 x 32,000	No	No	Yes	No	None	Sylk, DIF, ASCII files	From $295
H & M Systems Software, Inc. **(201) 845-3357**	Softplan	IBM mainframes	72K	Yes	20	20	10	—	16,000 cells	Yes	No	Yes	—	—	Proprietary software packages	$12,500-$18,000

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. Further product information is available from the vendors.

COMPANY	PRODUCT	HARDWARE	MEMORY REQUIREMENT (IN BYTES)	RECALCULATES SELECTED CELLS	NUMBER OF MATH FUNCTIONS	NUMBER OF LOGICAL FUNCTIONS	NUMBER OF FINANCIAL FUNCTIONS	NUMBER OF STATISTICAL DATA BASE FUNCTIONS	MATRIX SIZE (ROW X COLUMN X DEPTH)	EXTRACTS AND COMBINES FILES	LINKS WITH OTHER SPREADSHEETS	SPARSE MATRIX STORAGE	INTERNAL GRAPHICS	LEVEL OF GRAPHICS (PRESENTATION- OR WORK-QUALITY)	READ/WRITE COMPATIBILITIES	PRICE
IBM **(800) 447-4700**	IBM Planning Assistant Version 2.00	IBM PC, XT, AT, PS/2 Models 25, 30, 50, 60, 80, PC Convertible, Portable PC	256K	No	4	0	4	1	255 x 70 x 1	Yes	No	No	No	None	Reads from Sylk, DIF files, Filing Assistant; writes to Sylk, DIF files	$195
	IBM Personal Decision Series Plans+ Edition Version 2.00	IBM PC, XT, AT, PS/2 Models 25, 30, 50, 60, 80, 3270 PC, PC Convertible	384K	Yes	35	12	13	9	9,999 x 255	Yes	Yes	Yes	Yes	Both	Accesses files directly (without PDS definition): 1-2-3, Symphony, DIF files; data base files (with PDS definition): ASCII files, Dbase II, III, III Plus; PIC files, Displaywrite 4, Displaywrite Assistant	$425
Indian Ridge Enterprises, Inc. **(415) 268-1631**	The Spreadsheet	IBM PC, XT, AT, PS/2 and compatibles	128K	Yes	25	10	10	0	256 x 64	Yes	Yes	No	Yes	Work-quality	ASCII files	$49.95
Information Builders, Inc. **(212) 736-4433**	Foccalc	IBM mainframes, PC, XT, AT and compatibles; DEC VAX/VMS	640K (on PC), 2M (on mainframe)	Yes	21	5	4	15	1,000 x 1,000	Yes	Yes	Yes	Yes	Presentation-quality	Focus DBMS, 1-2-3	$1,600-$25,000
Innovative Software, Inc. **(800) 438-7627**	Smart Spreadsheet with Graphics	MS-DOS, Xenix, Unix System V.5 machines	256K on MS-DOS; 1.5M on Xenix	Yes	30	13	16	22	999 x 9,999	Yes	No	Yes	Yes	Presentation-quality	1-2-3 Version 1A, Version 2, Sylk, ASCII files	$495-$695
Interactive Data Corp. **(617) 863-8100**	Data Sheet	IBM PC and compatibles	384K, 448K	Yes	4	0	—	—	256 x 999	Yes	Yes	No	No	None	1-2-3, Symphony, proprietary products	$5,000-$25,000
ISD Marketing, Inc. **(416) 479-1991**	VIP Professional	Atari ST; Apple IIGS, IIe, IIc; Commodore Amiga	256K, 512K, 1M	No	17	5	4	12	8,192 x 256	Yes	Yes	Yes, Atari version	Yes	Presentation-quality	1-2-3 Version 1A	$149.95-$300
	Masterplan	Atari ST, IBM PC running JEM	512K	No	17	5	4	5	8,192 x 256	Yes	No	Yes	Yes	Presentation-quality	1-2-3 Version 1A, JEM Paint	$129-$149.95
JMA Technologies, Inc. **(713) 780-7262**	Optiqube	DEC VAX/VMS, HP 3000 running MPE, systems running MS-DOS	256K	Yes	37	33	11	15	256 x 999 x 64	Yes	Yes	No	Optional	Presentation-quality	ASCII, DIF files	$3,500-$14,000
Lattice, Inc. **(800) 533-3577**	Unicalc	Commodore Amiga, OEM version for PC-DOS, VAX/VMS, AT&T Unix, Xenix	256K	Yes	30+	—	—	—	8,192 x 256	Yes	Yes	Yes	Yes	Work-quality	ASCII, DIF files	$79.95
Lifetree Software, Inc. **(408) 373-4718**	Words and Figures	IBM PC and compatibles	256K	No	17	5	5	14	9,999 x 256	Yes	No	Yes	Yes	Presentation-quality	1-2-3 Version 1A	$99
Lotus Development Corp. **(617) 577-8500**	1-2-3 Version 2.01	IBM PC, XT, AT, PC Jr, Portable PC, PS/2, 3270-PC, 3270/G, 3270/GX; Compaq Portable, Portable Plus, Deskpro; AT&T PC 6300	256K	No	22	16	11	14	8,192 x 256	Yes	Yes	No	No	Presentation-quality	1-2-3; Dbase; Sylk, DIF files	$495
Microsoft Corp. **(206) 882-8080**	Excel Version 2.0	IBM PC AT, PS/2; Compaq Deskpro 386 and compatibles	640K	—	15	6+	13	25	16,384 x 256 x unltd. depth	Yes	Yes	Yes	Yes	Presentation-quality	Excel; 1-2-3 Version 1A, 2; DIF, Sylk, text files; Dbase II, III	$495
	Excel for the Mac Version 1.06	—	512K	No	18	6	8	18	16,384 x 256 x unltd. depth	Yes	Yes	No	Yes	Presentation-quality	1-2-3, Multiplan, Sylk files	$395
	Multiplan Version 3.0	PCs running MS-DOS	256K	Yes	19	12	8	6	4,096 x 255 unltd. depth	Yes	Yes	Yes	No	None	1-2-3; Symphony; Sylk, ASCII files	$195
Migent, Inc. **(800) 633-3444**	Ability Plus	IBM PC, XT, AT, PS/2 and compatibles	384K	No	46	14	12	25+	702 x 9,999	Yes	Yes	Yes	Yes	Presentation-quality	1-2-3	$259
Mosaic Marketing, Inc. **(617) 491-2431**	Twin	IBM PC and compatibles	350K	Yes	—	—	—	—	256 x 8,192	Yes	Yes	Yes	Yes	Presentation-quality	1-2-3, Visicalc	$99
	Diamond	IBM PC and compatibles	512K-640K	Yes	—	—	—	—	256 x 8,192	Yes	Yes	Yes	Yes	Presentation-quality	1-2-3 Release 2.0	$199
Olympus Software, Inc. **(801) 572-1610**	Ultracalc	MS-DOS, Unix, VAX/VMS, Ultrix machines, IBM machines running IX kernel	500K on MS-DOS	Yes	20	20	20	20	32,000 x 32,000	Yes	Yes	Yes	Yes	Presentation-quality	ASCII files	$200-$5,000
Oracle Corp. **(800) ORACLE-1**	SQL Calc	IBM PC and compatibles; Unix machines; DEC VAX/VMS, VAX Ultrix	256K	No	20	11	4	—	256 x 8,000	Yes	Yes	Yes	No	None	Oracle DBMS	From $199
Palantir Software **(800) 368-3797**	Wincalc	IBM PC, XT, AT, PS/2 and compatibles running Windows	512K	No	25	9	5	11	32,000 x 32,000	Yes	No	No	Optional	Presentation-quality	Sylk and DIF files	$195
Paperback Software International **(415) 644-2116**	VP Planner	IBM PC, XT, AT and compatibles	256K	No	19	5	5	18	9,999 x 256	Yes	No	Yes	Yes	Presentation-quality	WKS, WK1 files	$99.95
	VP Planner Plus	IBM PC, XT, AT and compatibles	384K	Yes	22	9	11	18	9,999 x 256	Yes	No	Yes	Yes	Presentation-quality	Dbase, WKS and WK1 files	$179.95
Parallax Systems, Inc. **(212) 475-4001**	Execucalc	IBM 370 architecture	1M	Yes	20	5	5	15	999 x 702	Yes	Yes	No	Yes	Presentation-quality	1-2-3	$5,000
Para Research, Inc. **(617) 283-3438**	Easy Calc	IBM System/36	40K	Yes	5	10+	3	0	52 x 999	Yes	No	No	Yes	Work-quality	Proprietary packages	$950-$1,500
PCSG, Inc. **(800) 544-4699**	Lucid 3-D	IBM PC, XT, AT and compatibles	256K	Yes	—	—	7+	9+	9,999 x 254	Yes	Yes	Yes	Yes	Presentation-quality	1-2-3	Information not provided
Pecan Software Systems, Inc. **(718) 851-3100**	Jack2	IBM PC and compatibles	512K	Yes	—	—	—	—	1,024 x 1,024	Yes	No	No	Yes	Work-quality	Proprietary packages	$99.95
Prevail Systems, Inc. **(412) 369-4900**	Prevail Spreadsheet	Most Unix-based systems	1M-2M	Yes	—	—	—	—	—	Yes	Yes	—	Yes	Work-quality	ASCII files	Information not provided
PSI Energy Software Ltd. **(403) 245-6820**	10 Planner, Graphics Consolidation 3D Spreadsheets	IBM mainframes and PCs	612K	Yes	11	9+	9	9+	2,000 x 2,000 x 2,000	Yes	Yes	Yes	Yes	Presentation-quality	1-2-3	From $495

COMPANY	PRODUCT	HARDWARE	MEMORY REQUIREMENT (IN BYTES)	RECALCULATES SELECTED CELLS	NUMBER OF MATH FUNCTIONS	NUMBER OF LOGICAL FUNCTIONS	NUMBER OF FINANCIAL FUNCTIONS	NUMBER OF STATISTICAL DATA BASE FUNCTIONS	MATRIX SIZE (ROW X COLUMN X DEPTH)	EXTRACTS AND COMBINES FILES	LINKS WITH OTHER SPREADSHEETS	SPARSE MATRIX STORAGE	INTERNAL GRAPHICS	LEVEL OF GRAPHICS (PRESENTATION- OR WORK-QUALITY)	READ/WRITE COMPATIBILITIES	PRICE
QAX International Systems Corp. (904) 596-2090	Super/ Spreading	DG AOS and R-DOS; IBM PC, XT, AT running Super DOS	20K	Yes	5	1	0	—	702 x 999	Yes	Yes	No	No	None	None	$450
Ross Systems, Inc. (415) 856-1100	Maps/Model	DEC VAX/VMS	2M	Yes	20	6	14	5	32,767 x 32,767	Yes	No	Yes	No	None	Proprietary, DIF, ASCII files	From $15,000
Samna Corp. (800) 831-9679	Samna Plus IV	IBM PC, XT, AT, RT, PS/2 and compatibles; Convergent Technologies S series; AT&T 3B series; NCR Tower; 386 Unix	512K	No	20	10	10	10	6,400 cells	Yes	Yes	Yes	No	None	DIF files	From $695
Santa Cruz Operation, Inc. (408) 425-7222 ext. 560	SCO Professional	DEC VAX series; NCR Tower series; AT&T 3B series; Convergent Technologies S series; Altos; Intel 80286, 80386 machines and compatibles; IBM PS/2 Models 50, 60, 80; Tandy 3000, 4000	1M	Yes	17	5	5	14	8,192 x 256	Yes	No	Yes	Yes	Presentation-quality	1-2-3; Dbase; Multiplan; DIF, Sylk, ASCII, WKS files	$795-$10,995
Saturn Systems, Inc. (612) 944-2452	Saturn-Calc	DEC PDP, VAX series	—	Yes	21	4	17	.20+	16,000 or 100,000 cells	Yes	Yes	No	Yes	Both	ASCII files	$500-$10,000
Share Data, Inc. (602) 961-7519	Prostaff 3D Spreadsheets	IBM PC, XT, AT and compatible	256K	Yes	6	6	15	4	255 x 255 x 255	Yes	Yes	No	No	None	DIF, ASCII files	$39.95
Share House, a division of Datamension (312) 564-5512	Report Manager	IBM PC, XT, AT and compatibles	256K	No	39	11	14	7	255 x 255 x 255	Yes	Yes	Yes	Yes	Work-quality	DIF, ASCII files	$49.95
Sinper Corp. (201) 662-7999	TM/1	IBM PC, XT, AT, PS/2 and compatibles; Wang PC	256K	Yes	9	5	5	13	4M cells	Yes	Yes	Yes	Yes	Work-quality	1-2-3, Versions 1 and 2, Symphony; Dbase; DIF, ASCII files	$795
Soft Pro Systems (415) 234-5440	Phimod	Wang VS	256K	Yes	2	5	0	0	500 x 1,024	Yes	Yes	Yes	No	None	Wang VS files	From $1,890
Software Innovations, Inc. (603) 883-9300	VC with Minimal Calculation	Unix machines	128K	Yes	30	2	—	0	1,000 x 32,000	No	Yes	Yes	Yes, limited	Work-quality	None	$1,000 (source only)
Software Products International, Inc. (619) 450-1526	Spreadsheet Access	IBM PC, PS/2 and compatibles	256K	Yes	9	4	14	16	3,000 x 216	Yes	Yes	Yes	Yes	Presentation-quality	Lotus Worksheet; text, DIF files	$195
	OA2 Network Spreadsheet	Netbios 3.1 DOS and compatibles; Novell and compatibles; PC-Net and compatibles; 3Com machines	320K per station	Yes	9	4	14	16	3,000 x 216	Yes	Yes	Yes	Yes	Presentation-quality	Lotus Worksheet; text, DIF files	$195
Software Publishing Corp. (415) 962-8910	PFS: Professional Plan	IBM PC, XT, AT and compatibles	512K	—	30	27	13	24	32,766 x 32,766	Yes	Yes	Yes	Yes	Presentation-quality	1-2-3, Versions 1 and 2	$99
Southwind Software, Inc. (316) 524-9100	Tactician	Unix machines	256K	Yes	22	7	6	8	1,024 x 1,024	Yes	Yes	No	Yes	Presentation-quality	1-2-3, Multiplan, Visicalc	$425-$5,250
Specialized Systems Consultants (206) 367-8649	Publicalc	IBM PC, XT, AT and compatibles; Unix, Xenix, DOS machines	—	Yes	6	7	—	—	100 x 100	—	No	Yes	No	None	None	$10 (binary code), $50 (source code)
Spinnaker Software Corp. (800) 826-0706	Easy Working: The Planner	IBM PC; Apple machines; Commodore 64	256K, 128K, 64K	No	11	—	—	—	250 x 250	Yes	Yes	—	No	None	None	$9.95
	Better Working Spreadsheet	Apple IIe, IIc; Commodore 64	48K, 64K	No	30	9	—	—	254 x 100	Yes	Yes	Yes	No	None	None	$29.95-$59.95
Stone Mountain Computing Corp. (805) 964-9101	Graphic Outlook	DEC VAX/VMS	2M	Yes	35	8	15	10	999 x 500	Yes	Yes	Yes	Yes	Presentation-quality	Symphony, Datatrieve, DIF files, flat ASCII files	Information not provided
Supersoft, Inc. (217) 359-2112	Scratchpad Plus	Systems running CP/M 80, CP/M 86, MS-DOS, PC-DOS, Xenix	From 64K	Yes	19	5	12	32	9,999 x 9,999	Yes	Optional	Yes	No	None	Supercalc SDT, DIF files	$50
Surpass Software Systems, Inc. (415) 382-8840	Surpass	IBM PC and compatibles	512K on hard disk	Yes	17	7	11	14	8,192 x 256	Yes	Yes	Yes	Yes	Presentation-quality	WKS, WK.1, ASCII files	$495
System Support Products, Inc. (703) 642-8760	Deskworks	IBM System/34, 36	34K, 36K	Yes	22	10	11	7	999 x 9,999	Yes	Yes	No	No	None	None	$395
Thoroughbred Division, Concept Omega Corp. (800) 524-0430	Thoroughbred	Unix machines; IBM PC and compatibles running T Basic or T OS	256K	No	30+	15	2	0	999 x 999	No	Yes	No	No	None	Files created under proprietary operating system	$595-$3,795
Tower Systems International (714) 650-4900	Omnicalc	IBM 9370 series, 4300, 3080, 3090, 370	30K	Yes	18	10	14	6	255 x 32,767 x 255	Yes	Yes	Yes	Yes, through GDDM	Presentation-quality	Any DBMS or file structure on mainframe CPU	From $150 per month
Trax Softworks, Inc. (213) 475-8729	Electronic Spread Sheet	IBM mainframes, 9370 series	400K	Yes	30	6	8	12	1 million x 1 million x 1 million	Yes	No	Yes	No	None	Symphony, Visicalc, VSAM files, DB2, SQL/DS	$8,000-$15,000
Unipress Software (201) 985-8000	Q-Calc Standard	Unix, Xenix, Ultrix machines	256K	No	—	—	—	—	8,192 x 256	Yes	Yes	Yes	Yes	Presentation-quality	1-2-3, any file structure	$750-$4,000
Uniq Digital Technologies, Inc. (312) 879-1008	Unicalq	DEC VAX, Pyramid, AT&T	512K	Yes	—	—	—	—	—	Yes	No	No	No	None	Unify, Q-Office	$600-$2,000
Vaxcalc (415) 572-2490	Vaxcalc	DEC VAX/VMS	—	Yes	71	6	9	4+	18,000 x 99,999	Yes	Yes	Yes	Yes	Presentation-quality	1-2-3	$550-$12,500
Videx, Inc. (503) 758-0521	Timewand Manager	Mac through Mac II	512K	Yes	6	5	3	—	60-20,000	Yes	Yes	—	Yes	Presentation-quality	ASCII text export files	$489
Visicorp (408) 970-0566	Flashcalc	IBM PC, XT, AT; Apple II Plus, IIe, IIc	64K-512K	No	16	8	7	0	254 x 63	Yes	No	No	No	None	DIF files	$99
Wang Laboratories, Inc. (617) 459-5000	Wang 20/20	Wang VS, PC, APC, PC 240, 280, 380 laptop	384K, 1M	No	17	5	10	13	8,192 x 1,000	Yes	Yes	Yes	Yes	Presentation-quality	Wang PACE, Office, WP, WP+, Indexer	$495-$7,500
Wordperfect Corp. (801) 225-5000	Planperfect	IBM PC and compatibles	256K	Yes	22	10	10	24	8,192 x 256	Yes	Yes	Yes	Yes	Presentation-quality	1-2-3; Dbase; DIF, ASCII files	$395

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Jan. 25	LANs	Jan. 8
Feb. 8	DEC-Compatible Software	Jan. 21
Feb. 29	Performance Management/ Capacity Planning	Feb. 12
March 14	DBMS	Feb. 26
March 28	Micro-to-Host-Links	March 11
April 11	PCs (IBM-Compatible) Portables/Laptops	March 28
April 25	TBA	April 8
May 9	Printers	April 22
May 23	Data Communications	May 6

DATA STREAM

Mark Freund

Suspended animation

As the year draws to a close, I increasingly feel a new wave of nervousness descending on corporate MIS. I sense a new struggle between divisions within MIS — a tug-of-war, if you will — for control of corporate local-area networks.

MIS is increasingly becoming the scene of power struggles for control of corporate LAN standard setting, LAN implementation and hardware selection.

The outcome determines

Continued on page 42

DEC pushes CIT at conference

Seeks third-party distributors' support for VAX-PBX integration

BY ELISABETH HORWITT
CW STAFF

DALLAS — Digital Equipment Corp. chose the North American Telecommunications Association's (NATA) annual conference to launch a major effort to win voice/data systems integrators' support for its Computer Integrated Telephony (CIT) program.

Announced jointly at Telecom '87 in Geneva by DEC, British Telecommunications PLC and Northern Telecom, Inc., the CIT program was designed to provide common interfaces for the exchange of information between computer hosts and telecommunications equipment — particularly private branch exchanges (PBX).

"CIT takes voice/data integration beyond the physical level, where you just have voice plus 9.6K bit/sec. data over the same twisted-pair cabling," said Marty Rosenblith, DEC's industry segment manager for telecommunications.

"It allows users to integrate the computing power" in both a DEC VAX and an intelligent PBX node "to provide cost-benefit applications" including customer directory searches, message desk capabilities and telemarketing functions, Rosenblith explained.

Educating retailers

DEC representatives used the Unicom 1 '87 conference, which was held here, to launch a program to educate third-party telecommunications distributors who, once CIT gets under way, will be selling, implementing and supporting computers as well as PBX equipment, according to Rosenblith.

DEC is also trying to generate CIT support among PBX manufacturers through their distributors, he indicated. "A lot of representatives asked us to go to their manufacturers about developing CIT applications for their customer bases."

The show was a success from the point of view of getting telecommunications distributors interested in the CIT effort, Rosenblith said.

Regional Bell holding company subsidiary Bellsouth Advanced Systems is now working with DEC and Northern Telecom on CIT-based applications that it plans to remarket to its customers, according to Rosenblith.

Interested supporters

Other companies that talked with DEC at the show about supporting CIT included "a large firm that is working on its first PBX and wants to build CIT right in," and a current PBX manufacturer, Rosenblith said.

In addition, DEC was reportedly approached by several Northern Telecom PBX distributors.

DEC's CIT push dovetailed with the findings of a recent NATA survey. The survey found that an increasing number of telecommunications distributors are "branching into areas that have traditionally been within the domain of the computer industry."

Styling themselves as integrators of both voice and data communications, these companies specialize in developing and supporting applications that are tailored to users' needs, the survey said.

Inside

- Thomas-Conrad announces Arcnet interface board that uses PC AT bus. Page 43.
- File-transfer software for Tandem's Nonstop systems debuts from Phitech. Page 43.

Data View

Users rate the leading private branch exchange vendors

Siemens scores highest overall; GTE is at the bottom

	AT&T	Rolm	Northern Telecom	NEC	Mitel	GTE	Siemens
Ease of installation	3.5*	3.7	3.8	3.7	3.5	🟥 3.1	🟦 4.6
Ease of making changes	3.5	3.9	3.8	3.8	3.6	🟥 3.3	🟦 4.4
Expandability	🟥 3.4	3.9	4.1	🟦 4.2	4	3.6	3.7
Overall performance	3.9	4	🟦 4.1	4	4	🟥 3.8	4
Price	3.1	🟥 2.9	3.4	3.9	🟦 4.1	3.2	4
Reliability	4	4.1	4.2	🟦 4.3	4	🟥 3.7	3.8
Remote diagnostics	3.5	3.9	3.9	3.5	3.6	🟥 3	🟦 4
Software performance	3.5	3.8	3.7	🟥 3.4	3.8	3.8	🟦 4
Technology	🟥 3.1	3.9	4	🟦 4.2	3.8	3.4	3.9

🟦 = Highest score for feature 🟥 = Lowest score for feature

* Based on scale of 0 to 5; 0 = no value, 5 = highly valuable

INFORMATION PROVIDED BY MARKET INFORMATION CENTER, INC.
CW CHART

STANDARDS WRAP-UP

Prime to offer X.400

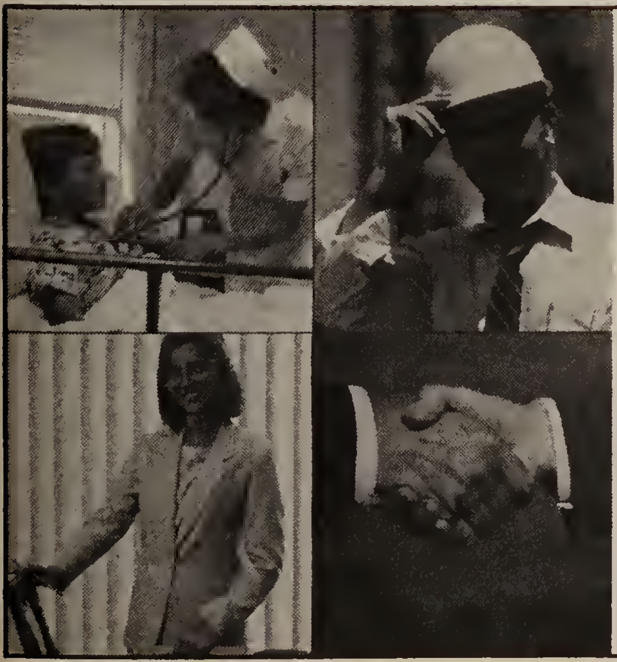
Prime Computer, Inc. has announced its intent to offer electronic mail products based on the CCITT X.400 standard.

Scheduled for late 1988 commercial release are Prime's basic X.400-based E-mail system and a programming interface that allows developers to write applications for the product, the vendor said. An end-user interface system with optional menu will be shipped in 1989.

General Datacomm Industries, Inc. in Middlebury, Conn., has become the fourth vendor to announce support for AT&T's Unified Network Management Architecture (UNMA). UNMA will provide management first for AT&T's equipment and services and eventually to a variety of systems through support of the Open Systems Interconnect standard, AT&T has indicated.

The U.S. Department of the Treasury has awarded **AT&T** an $86 million contract to build what will be the largest private Integrated Services Digital Network system in the world, AT&T claimed. The initial contract calls for delivery in 1989 of a 26,000-line network, based on AT&T's 5ESS central-office switch, that will serve Treasury

Continued on page 42



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THE FIRST CHOICE.

Freund

FROM PAGE 41

economic power in one sense, in terms of both inventories and budgets, but more importantly, it determines political power.

This power is particularly significant in organizations in which communications is recognized by executive management as a strategic tool. (The number of executive networks we have designed and installed at various firms this year is staggering.)

A network can quickly become the lifeline to crucial corporate data. Within months of a network's installation, executive managers start asking: "How do I get into the caverns of information archived in our corporate mainframes so that I can get the essential information I need to make my decisions?"

Now that traditional MIS groups are recognizing, or at least feeling, the impact LAN technology has on corporate strategy, a new set of skirmishes is beginning.

New, unique confusion

Just as we became used to the new MIS structure, under which "big" was data processing and "not-so-big" was personal and end-user computing, LANs have found a new and unique way of creating confusion.

The end users and personal computing services groups tend to see the LAN as a natural extension of the personal computer environment, adding power and utility in a logical fashion. The DP services group, however, sees the LAN as a system that it will ultimately have to support. DP services understands that LAN components — namely workstations and gateways — are beginning to replace terminals and controllers, which fall under its domain.

An MIS department divided against itself tends to produce conflicting priorities in terms of LAN product acquisition.

While end-user computing tends to concentrate on LAN user interfaces and application transparency, DP services groups are becoming increasingly concerned about centralized network control and administration — and not solely because of fear about loss of power. Their motivation also stems from the need to maintain adequate support levels.

The net result, I predict, will be the evolution of distributed processing environments consisting of both large mainframes and intelligent workstations, in which computer horsepower is allocated according to application requirements.

Meanwhile, MIS managers are faced with a difficult transition period. The short-term results of this struggle are already apparent. Many MIS groups appear to be in suspended animation when it comes to true LAN implementation strategies. LANs are still being looked at as ancillary systems, to be hidden in departments and occasionally hung from mainframes.

And yet a fundamental shift in power is occurring. Users are gaining more — often at the expense of MIS. But the key is that the corporate fabric is being slowly rewoven, and it is important for MIS to realign itself quickly to become a strategic thread before end users turn into their own systems analysts.

Freund is a cofounder of Interconnect Consulting Group, a Pasadena, Calif., company that designs, engineers and installs networks primarily at Fortune 500 companies.

Standards

FROM PAGE 41

Department offices in the Washington, D.C., area.

A major automotive firm, which a source said is General Motors Corp., has reportedly contracted with **Allen-Bradley Co.** to install the first Manufacturing Automation Protocol (MAP) network linking programmable controllers. It will run on fiber-optic cable, not the more common broadband coaxial cable. The net will support 150 Allen-Bradley PLC-3 programmable controllers and use existing MAP Version 3.0 protocols; it will be upgraded to the full specifications when they become available.

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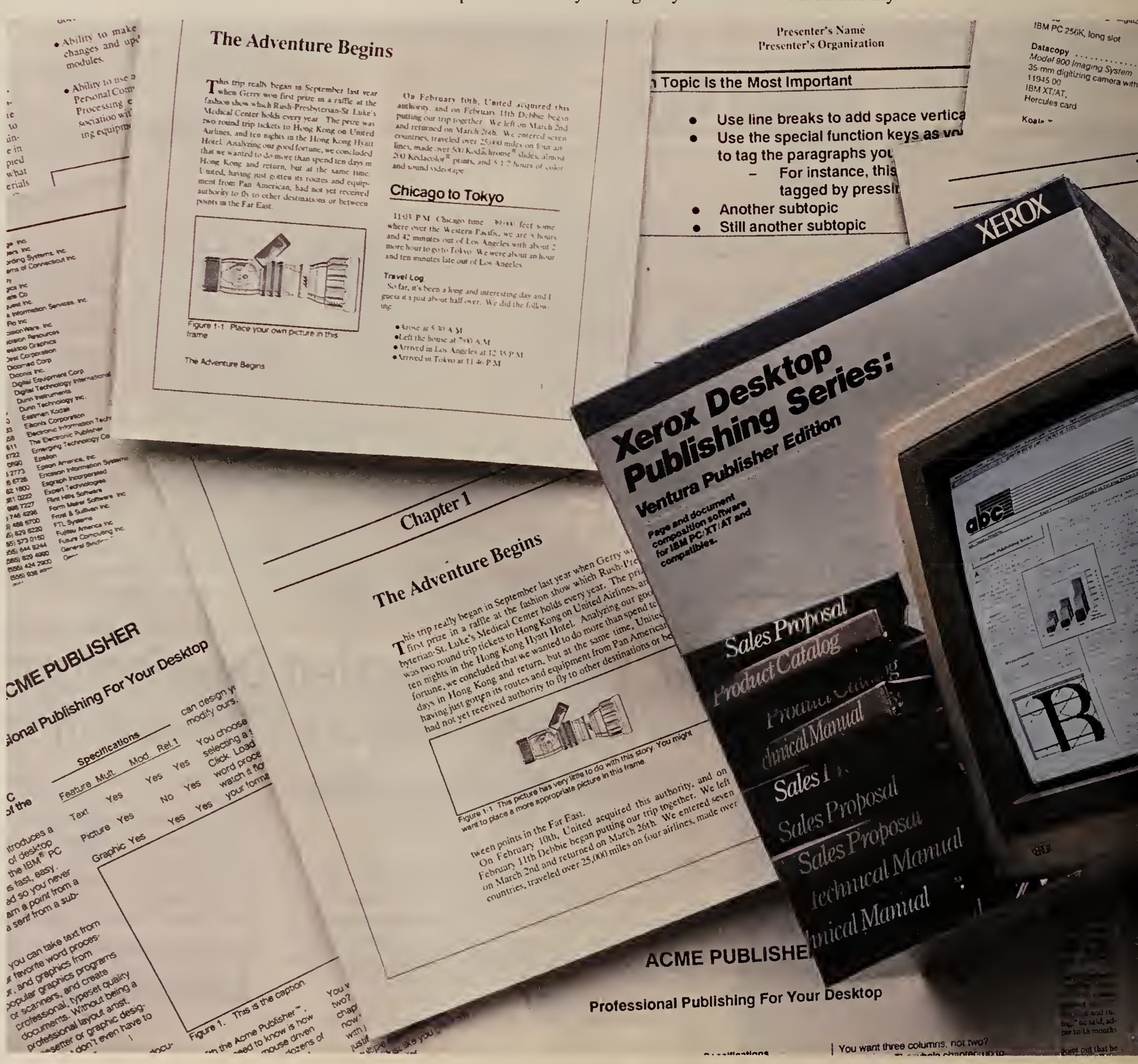
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NEW PRODUCTS

Local-area network hardware

An Arcnet interface board that utilizes the IBM Personal Computer AT 16-bit data bus has been announced by **Thomas-Conrad Corp.**

The **TC6045 Arc-Card/AT** features a zero-wait state, true dual-port, 2K-byte data buffer and switch-selectable enhanced or compatible modes of operation. Enhanced mode allows the TC6045 to work with such add-in boards as IBM Enhanced Graphics Adapter and Lotus/Intel/Microsoft Extended Memory Specification boards as well as IBM 3278 and 3279 emulation adapters. In compatible mode, the Arc-Card/AT functions as a drop-in replacement for 8-bit Arcnet interface boards.

The TC6045 operates in Intel Corp. 80286- and 80386-based ATs with bus speeds up to 20 MHz. It costs $495.

Thomas-Conrad, Suite 1C, 8403 Cross Park Drive, Austin, Texas 78754. 512-836-1935.

Local-area network software

Summanet, a distributed networking system featuring productivity software, has been announced by **Summa Computer Systems, Inc.**

The system, which is part of the vendor's Summa Office Automated System (SOAS), lets users share printers and modems as well as the processing power of the network. SOAS also includes electronic mail, an appointment scheduler, word processing, a fourth-generation data base and spreadsheet and communications capabilities. It can link up to 10 dumb terminals per CPU and 240 CPUs per network.

The SOAS system also supports IBM's PC-DOS, modem pools, print spooling, printer sharing and remote processing. The fully networked SOAS package costs $995.

Summa, 215 E. Water St., Syracuse, N.Y. 13202. 315-475-0870.

Links

A file transfer software package that runs on Tandem Computers, Inc.'s Nonstop systems has been announced by **Phitech, Inc.**

Called **Dataexpress**, the software supports batch transfer of files in any format, optionally reformatting to any other file format. It supports multiple media such as leased lines, dial-up, tape and disk as well as multiple communications protocols including 2780 and 3780 bisynchronous, Systems Network Architecture and asynchronous with error checking. Functions for monitoring communications lines and retransmission are also provided.

Other features include autodial, autoanswer and autocallback functions. Security, activity statements for customer billing and audit trails are also included.

Dataexpress costs from $30,000.

Phitech, Suite 710, 220 Montgomery St., San Francisco, Calif. 94104. 415-788-5455.

Modems/ Multiplexers

A line of **Data Interrupt Eliminators**, said to prevent data loss in a situation in which modems and telephones are used on the same line, has been announced by **Data Spec**, a division of Alliance Research Corp.

When the device is in place, any extension picked up while the modem or phone is in use is disabled.

One Eliminator is required for each telephone or modem sharing the same line. Four configurations are available: the Model MP600, a stand-alone in-line unit costing $9.95; the Model MP620, a modular version costing $10.25; the Model MP630, which replaces the standard telephone modular wallplate, costing $13.95; and the Model MP640, costing $11.95.

Data Spec, 20120 Plummer St., Chatsworth, Calif. 91311. 818-993-1202.

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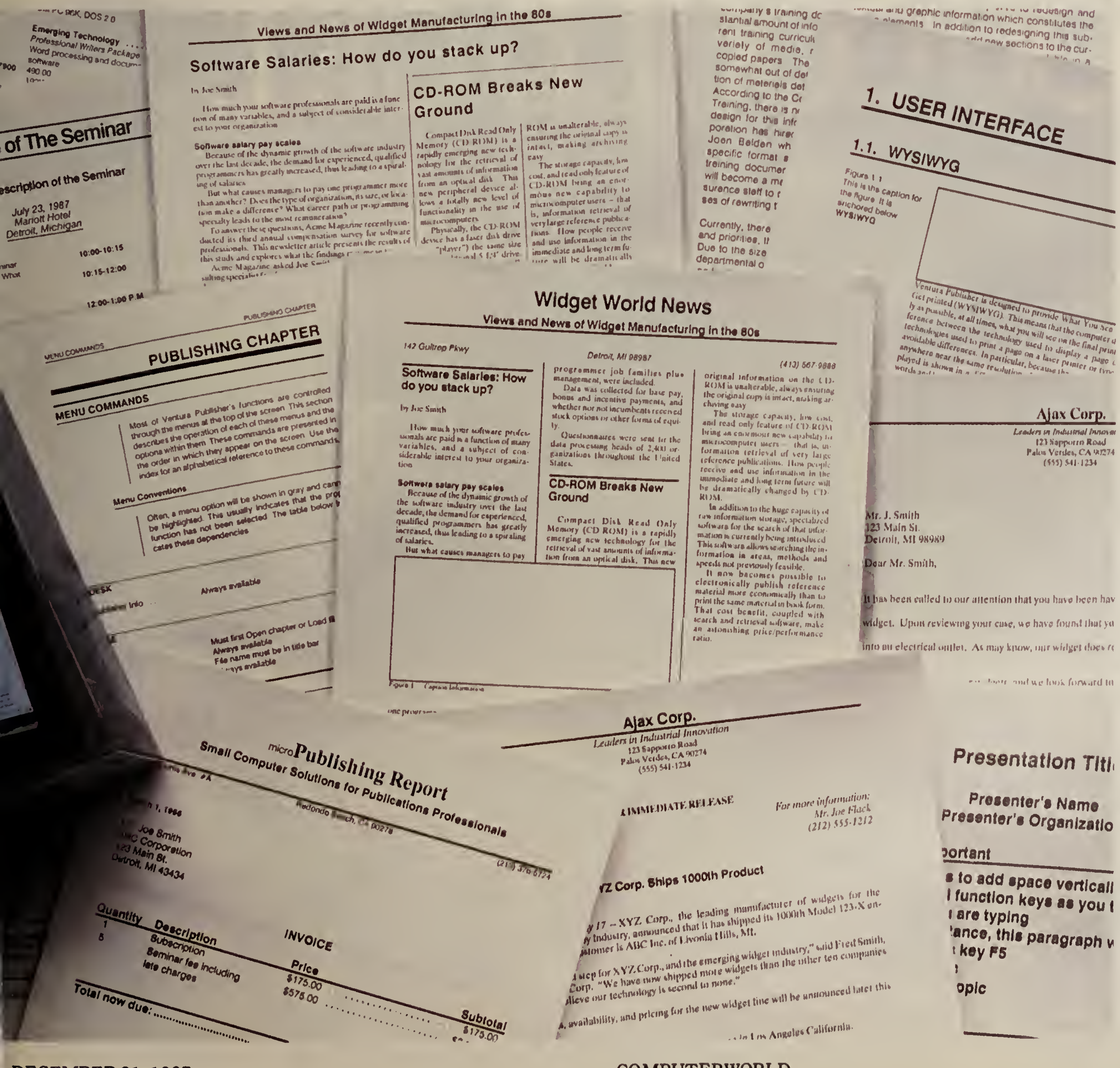

Views and News of Widget Manufacturing in the 80s
Software Salaries: How do you stack up?
CD-ROM Breaks New Ground
of The Seminar
Description of the Seminar
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1.1. WYSIWYG
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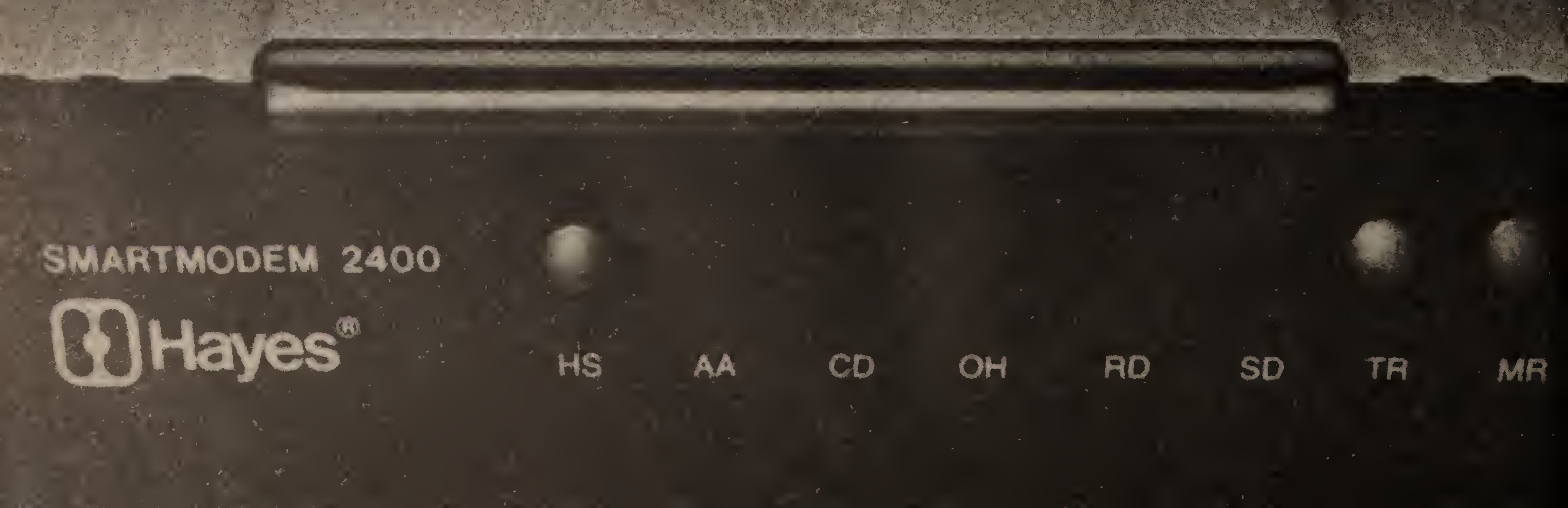


SYSTEMS & PERIPHERALS

HARD TALK

James Connolly

Bigger not always better

Sprawling, carnival-like computer shows — at least end-user shows like the National Computer Conference — have been fading away for a couple of years, leaving unanswered the question of where MIS managers and their staffs can go to share ideas with their peers and learn about product developments.

Industry-specific conferences and vendor-specific events provide two appropriate media. But conferences of those types still may not address issues that cut across industry lines and focus on day-to-day operations in MIS shops running machines in the class of IBM 3090 mainframes or 4381s.

For that reason, it is encouraging to see the MIS participation in conferences such as the Computer Measurement Group's (CMG) recently concluded CMG '87. CMG, which has almost doubled its attendance to more than 2,000 during the past three years, has a vendor exhibition area, complete with raffles and give-away promotional toys. But the vendor influence this year was kept in perspective by an emphasis on the educational program.

Vendor sales pitches disguised as technical papers were minimized, according to the comments of attendees, with vendors and users alike focus-

Continued on page 46

Memorex counters 3380 release

Boosts DASD performance, cuts prices, adds buffer to IBM compatibles

BY STANLEY GIBSON
CW STAFF

MILPITAS, Calif.— Continuing to respond to IBM's new generation of 3380 disk drives, Memorex Corp. has announced a string buffer, 4.5M byte/sec. transfer speeds, expanded cache memory and an integrated disk and controller.

In October, Memorex announced price cuts and added a 12-month warranty to its 3380-compatible disk drives. That announcement was the first of what Memorex said would be a three-part counterattack to IBM's September disk drive announcement.

At that time, IBM announced the 3380 Model J and K disk drives; a 4.5M byte/sec. channel speed; the CJ2 integrated disk and controller subsystem; and the 3990 controller, which offers several enhanced functions, including a 256M-byte cache. The Models J and K are available now, and the CJ2 and the 3990 are slated to be available in the third quarter of 1988.

The Memorex String Controller Buffer can improve performance by 15% by virtually eliminating missed disk rotations, according to the vendor. Upon locating a piece of information on a disk, the buffer records all the data on the track. The buffer retains the track, which is immediately available to the CPU for additional access.

Priced at $25,000, the String Controller Buffer can be installed on existing Memorex 3683 and 6240 HDPs and on future 3685, 3686 and 3683-HP controllers. It is scheduled to be available for single-capacity units in the first quarter and for double-capacity units in the fourth quarter of 1989.

"We think the most exciting thing is the buffer," said Louise Biggs, an industry analyst at Dataquest, Inc. in San Jose, Calif. She said the $25,000 price might be justified if a user is concerned with maximizing performance.

Responding to the IBM CJ2, Memorex announced the 3686 Direct Attach String Controller, which attaches directly to the host channel and performs the same functions as the Memorex 3888 storage control unit.

Comparisons

Memorex claimed the 3686 offers identical performance to IBM's CJ2. However, the vendor said the 3686 may house two head-disk assemblies of single or double capacity, while the CJ2 houses only one single-capacity head-disk assembly.

Users can attach up to three 3680-HP drives or 3682 double-capacity units. The 3686 reportedly will also support the String Controller Buffer. Set for availability in the third quarter of 1988, the unit is priced from $87,000 to $252,000.

Memorex also announced the 3680-HP disk-storage subsystem, which includes the 3683-HP string controller and up to four 3680-HP disk drives. The new subsystem offers a 12-msec access time. According to the vendor, the subsystem will be available in the first quarter of 1988 and will be priced from $70,000 to $235,000.

In addition, Memorex announced a feature that it said will increase the data-transfer rate for its 3888-23 cache controllers. Set to be available in the first quarter of 1988, it can reportedly be installed in the field for $3,000.

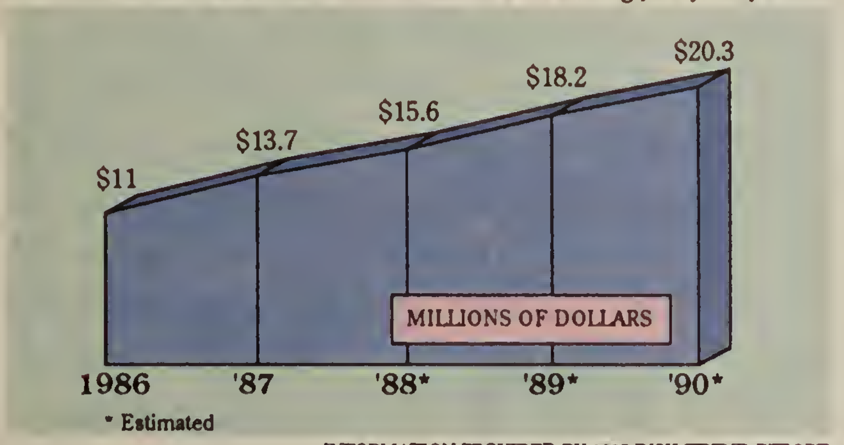
Memorex also announced a cache increase for 3888-23 cache controllers from 64M to 192M bytes. The memory can be installed on existing units in 16M-byte increments, Memorex said. The expanded cache will be available in December

Continued on page 46

Data View

Flying saucers

U.S. disk drive makers' sales to almost double during five-year period



INFORMATION PROVIDED BY 1987 DISK/TREND REPORT
CW CHART

Tolerant doubles throughput

SAN JOSE, Calif. — Tolerant Systems, Inc. recently expanded its Eternity series of fault-tolerant computers with the introduction of a faster CPU and a faster system bus.

The P300 System Building Block (SBB) uses a National Semiconductor Corp. 32332 microprocessor. Tolerant said the P300 provides up to twice the throughput of the earlier National Semiconductor 32032-based P200 SBB. Multiple SBBs can be tied together to operate as a single Unix-based computer.

Tolerant also announced the 5M byte/sec. P440 System Interconnect Bus (SIB), designed to provide twice the bandwidth of Tolerant's existing P400 SIB.

The Ethernet-based P440 SIB links multiple SBBs in a loosely coupled system and manages application-generated message traffic. Tolerant said it has four data paths and can handle 4,000 messages per second.

The vendor said the P300 SBB can be configured with 4M to 12M bytes of memory. A 4M-byte P300 SBB costs $65,250. Each 4M-byte memory expansion module costs $17,300. Upgrading an installed P200 SBB to a P300 SBB costs $20,000. The P400 SIB has a list price of $10,900.

Inside

- Dataproducts raises performance level on band printer line. Page 46.
- Clearpoint introduces a memory upgrade for Sun-3/60. Page 47.

Kentek overhauls line, adds duplex printer

BY STANLEY GIBSON
CW STAFF

Kentek Information Systems, Inc. recently overhauled its product line with three LED printers, including one that prints on both sides of a sheet.

The K-4 is a 24 page/min duplex printer that handles sheets up to 8½- by 14-in. in size.

Kentek announced two single-side printers. The K-2+ is rated at 15 page/min, and the K-3 can handle 24 page/min. All three print 300 dot/in.

The models replace Kentek's previous printer, the K-2, which prints 240 dot/in. at a rate of 12 page/min.

Kentek's K-2 has been sold by IBM as the IBM 3812. A Kentek spokesman declined to say whether the new printers will be marketed by IBM.

The controllers used in all three printers are based on a Motorola, Inc. 68000 microprocessor and come with 1M byte of memory. The K-2+ and K-3 controllers can manage two bit-mapped pages, and the K-4 can manage four bit-mapped pages, according to the vendor.

The printers provide full-page resolution graphics, image rotation and text-and-graphics merge in portrait or landscape format.

The K-3 and K-4 come with an internal 3½-in. floppy disk to which a second 3½-in. disk or a 20M-byte hard disk can be added. The K-2+ uses an internal 5¼-in. high-density disk.

Continued on page 46

Disk saves space for Tower

DAYTON, Ohio — NCR Corp. recently claimed space savings and higher performance with the announcement of an external disk drive for the NCR Tower 32/800 supermicrocomputer.

The NCR 3699 Disk Subsystem is available with 304M or 608M bytes of storage and can be expanded to hold 1.2G bytes of data in the same 5.4-sq-ft cabinet.

The subsystem is intended for users with high-performance, large data base needs, according to NCR.

The NCR 3699 includes a controller designed for increased reliability and lower cost of ownership through extensive use of very large-scale integration.

Other features include power-up diagnostics, concurrent I/O capabilities that improve performance by beginning a physical seek in advance, an average 26.3-msec access time and 10 read/write heads per disk.

Suggested prices are $17,470 for the 304M-byte model and $27,190 for the 608M-byte model.

Memorex

FROM PAGE 45

1988 at a price of $3,000 per megabyte.

A Memorex spokesman commented that the firm will eventually offer a 256M-byte cache to match the capacity of IBM's 3990.

Biggs said the Memorex 3680-HP subsystem does not have a quad path feature like IBM will offer when the IBM 3990 controller becomes available next fall.

Memorex is unlikely to offer the quad path as an enhancement because of architectural constraints.

Therefore, Memorex is offering improved performance now through the buffering feature, according to Biggs.

Kentek

FROM PAGE 45

The printers use the Kentek Command Language; in addition, they offer Hewlett-Packard Co. Laserjet Plus, Xerox Corp. Diablo 630 and Tektronix, Inc. Plot 10 emulations, the vendor reported.

Should paper in the printer jam — or should another printing error occur — the page will remain stored in the printer's memory, thus allowing the page to be reprinted, according to the vendor.

Suggested retail prices are $8,970 for the K-2+, less than $12,000 for the K-3 and $19,000 for the K-4.

Connolly

FROM PAGE 45

ing their presentations on practical experiences and efforts to overcome real problems in MIS shops.

CMG, which is oriented toward what attendees admit may still be niche roles such as capacity planning and performance evaluation, provided representatives of large- and medium-size MIS shops the chance to talk about more than pie-in-the-sky technologies. Speakers looked at questions such as how to improve CPU and I/O performance.

Topics of that nature, even if they are too technical for the MIS director of a Fortune 100 company, aren't offered at product-oriented shows. Smaller scale conferences such as CMG provide a forum for those subjects and raise the possibility that there are areas other than performance management that can generate interest, particularly for the mid-level manager.

Connolly is *Computerworld's* senior editor, systems & peripherals.

Printer line receives boost in speed

WOODLAND HILLS, Calif. — Dataproducts Corp. recently more than doubled the speed of its high-end band printer line with the announcement of a 1,500 line/min printer for data processing applications such as payroll, invoicing and report generation.

The LB 1515 joins a Dataproducts printer line that already includes 300 and 600 line/min models.

According to a Dataproducts spokesman, the LB 1515 features tractors above and below the print station for better control in addition to a bidirectional motion of paper and a standard paper puller that allows the tractor to maintain tension.

Other features include higher torque motors and heavy-duty eight-pin tractors, the company said.

Interfaces include Dataproducts parallel and Centronics Data Computer Corp. parallel and RS-232 serial interfaces, officials said. Dataproducts said IBM-compatible twin-axial and coaxial interfaces will be available at a later date.

The LB 1515 is scheduled to be available during the first quarter next year. The product has a suggested end-user price of $14,995, according to the company.

Five ways to improve

No matter what your printing needs or budget, IBM® has a personal printer to help see that your ideas look great on paper, and in the public eye.

The popular IBM Proprinter II (left) and the IBM Proprinter XL24, ideal for printing on wide paper (right).

The IBM Proprinter X24 with optional sheet feed (left) and the IBM Quietwriter III Printer with single-drawer sheet feed (right).

To begin with, there's the newest member of the best-selling Proprinter™ family—the IBM Proprinter II. With Fastfont,™ an extra-fast draft mode, this economical, hard-working printer handles general printing chores faster than ever.

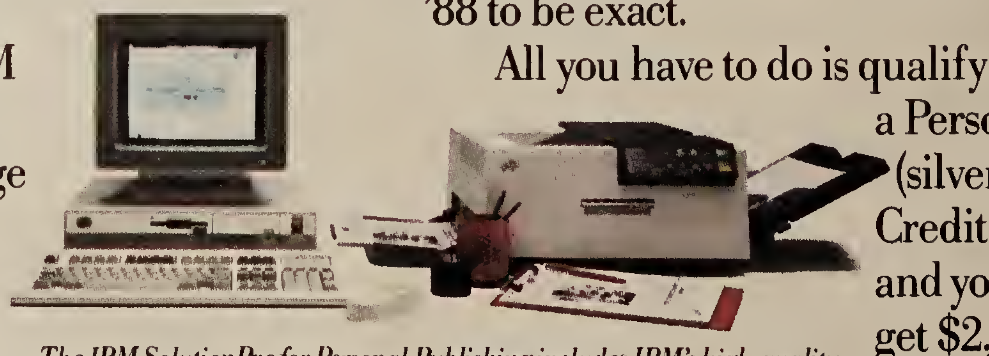
With the IBM Proprinter X24 and wide-carriage Proprinter XL24, you can produce letter quality text and superb graphics in a hurry.

For even higher quality text and graphics, consider the IBM Quietwriter® III Printer. It whispers along at nearly twice the speed of its predecessor and is available with either a single- or dual-drawer sheet feed, for added paper-handling convenience.

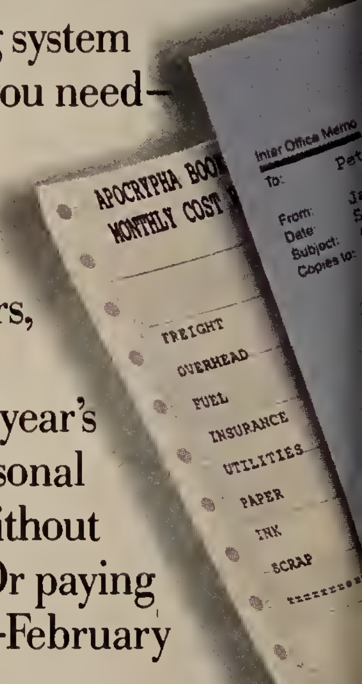
If you're looking to design and print documents with a professional look, we offer the IBM SolutionPac™ for Personal Publishing. This compact, desktop publishing system comes with everything you need—the hardware, software, service and support—to create eye-catching presentations, newsletters, memos and more.

And from now until year's end, you can get the personal printer of your choice without putting a penny down. Or paying a penny until next year—February '88 to be exact.

All you have to do is qualify for a Personal (silver) IBM Credit Card, and you'll get $2,500 of instant credit.* On the spot. For further details, ask your participating IBM authorized dealer. IBM®



The IBM SolutionPac for Personal Publishing includes IBM's high-quality laser printer, the Personal Pageprinter.



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NEW PRODUCTS

Processors

Clearpoint, Inc. has introduced a memory upgrade for the Sun Microsystems, Inc. Sun-3/60.

The upgrade is said to add five **SNX60** single in-line memory module sets, allowing the maximum system configuration of 24M bytes. Each 1M-byte SNX60 module is packed with 9M-bit DIP dynamic random-access memories, including one dynamic RAM to support parity checking.

The SNX60 is list priced at $400 per megabyte.

Clearpoint, 99 South St., Hopkinton, Mass. 01748. 617-435-5395.

Data storage

A laser optical-filing system has been announced by the **Laser Optical Filing Group** of C. Itoh Electronics, Inc.

The system, called the **Filing System +30**, is said to increase throughput by up to 30%. It is capable of storing digital images of up to 80,000 letter-size documents on a single 12-in. optical disk.

Other features include the capabilities to index, file, examine, retrieve and print documents. The product also supports an optional facsimile function. Up to eight local workstations can be linked up to one mile from a base unit. A library unit is available that supports up to 32 disks and automatically loads each optical disk for network access.

The Filing System +30 costs $94,500.

C. Itoh, 19300 S. Hamilton Ave., Torrance, Calif. 90248. 213-327-9100.

Terminals

Harris Corp.'s Data Communications Division has added the **Harris H191** display terminals to its Challenger line of IBM 3270-interactive terminals featuring RJ11 twisted-pair support and coaxial multidrop.

Using a Harris or IBM control unit, the multidrop feature allows direct attachment of up to eight displays to a single control-unit multiplexer port. The H191 supports coaxial or direct twisted-pair with a built-in RJ11 connector.

Prices range from $1,115 for a 12-in. monochrome base function display to $1,395 for a 14-in. monochrome extended function display.

Harris, 16001 Dallas Pkwy., Dallas, Texas 75248. 214-386-2000.

Printers/Plotters

The **4/66 Twinax** 480 char./sec. color dot matrix printer, designed to be connected to IBM System/34, 36 and 38 minicomputers, has been announced by **Honeywell Bull Italia**.

The 4/66 Twinax is said to emulate IBM 5224, 5225 and 5256 printers when connected to a minicomputer via a built-in twinaxial interface board. Other features include a letter-quality print speed of 75 char./sec. and the ability to switch from fanfold to cut-sheet stationery without rethreading continuous forms.

Simultaneous printing on single sheets and fanfold stationery is supported, as is unattended printing on single sheets.

The 4/66 Twinax costs $3,250.

Honeywell Bull Italia, Suite 800, 120 Howard St., San Francisco, Calif. 94105. 415-974-4340.

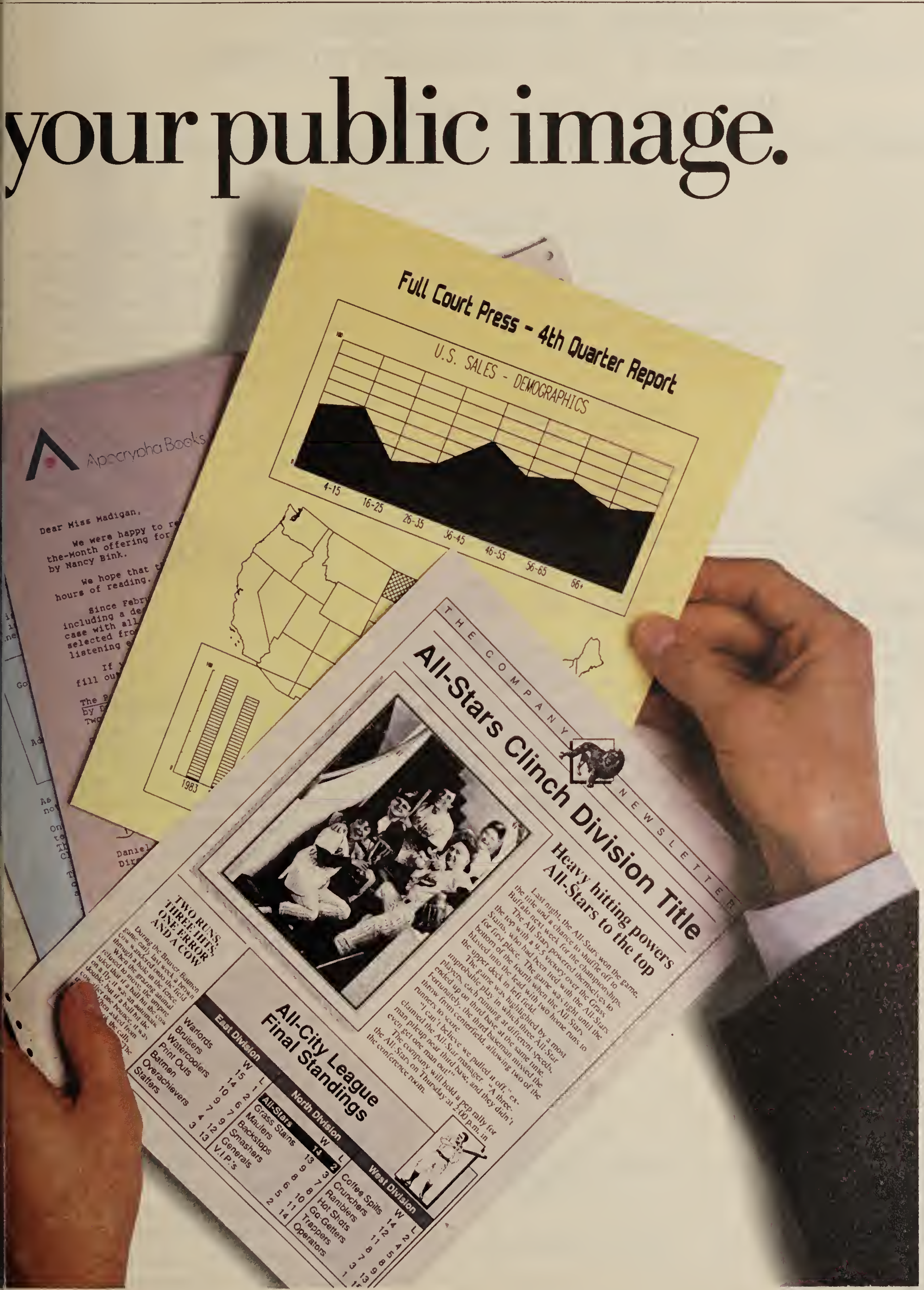
Power supplies

Nova Electric, Inc. has announced a **3-kVA uninterruptible power supply** that can be used with multiple voltages as well as at 50Hz or 60Hz.

Designed for operation with computer systems, process control systems, communications equipment, security systems and electronic data collection or monitoring equipment, the system meets CSA and IEC-435 requirements.

The power supply is priced at $8,495 including a 20-min battery pack.

Nova, 263 Hillside Ave., Nutley, N.J. 07110. 201-661-3434.


your public image.
Full Court Press - 4th Quarter Report
U.S. SALES - DEMOGRAPHICS
4-15
16-25
26-35
36-45
46-55
56-65
66+
1983
Apocrypha Books
Dear Miss Madigan,
THE COMPANY NEWSLETTER
All-Stars Clinch Division Title
Heavy hitting powers All-Stars to the top
TWO RUNS, THREE HITS, ONE ERROR AND A COW
All-City League Final Standings
East Division
North Division
West Division

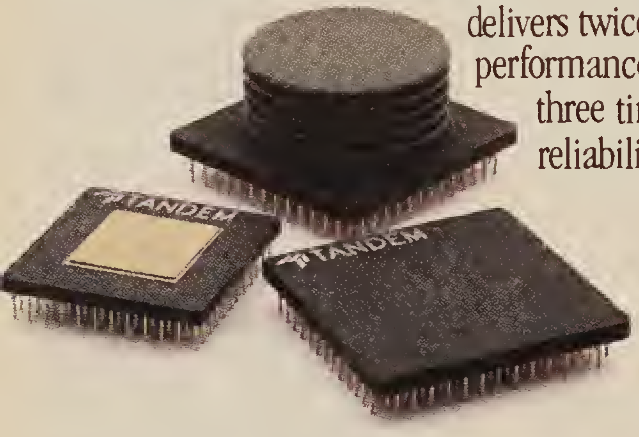
NonStop VLX.™

Tandem technology sets the new standard for large applications in on-line transaction processing.

More transactions per second at a lower cost per transaction than any system in the world.

THE CIRCUITRY'S FAST.

We designed the system in our own laboratory, right down to our own unique VLSI chips. The result is more circuitry in less space. With fewer components than our next largest system, the VLX delivers twice the performance and three times the reliability.



PROCESSORS WITH LARGE APPETITES.

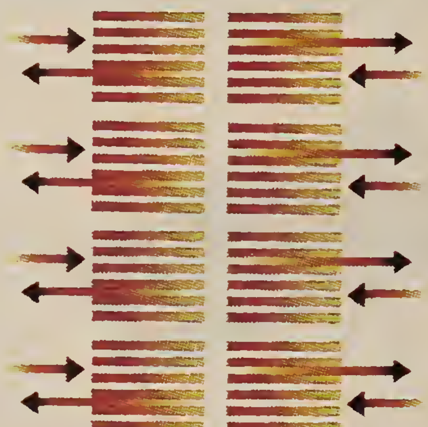
The VLX processors move transactions in 32-bit chunks. They reach into main memory in 64-bit chunks. Because this happens in parallel, more work gets done in less time at a lower cost per transaction.

THE SERVICE IS EASY.

All critical components are field replaceable. When service is required, it's faster. You don't even have to stop an operation to add or replace components.

THE DATA EXPRESSWAY.

In a conventional database, I/O requests must be handled sequentially. This creates queues that slow response time. In the VLX system, there are multiple paths to multiple disks. Data enters and leaves the database simultaneously. No time is wasted, and all disk space gets used.

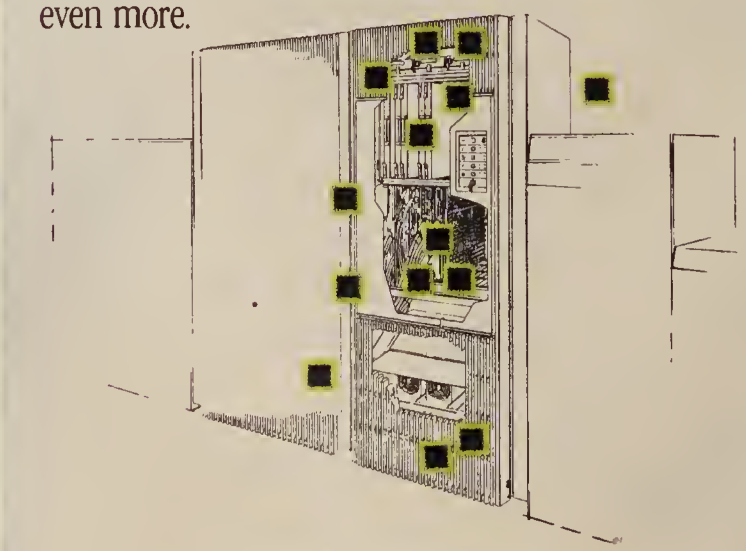


DIAGNOSTICS FROM A DISTANCE.

An integrated microprocessor allows us to monitor the system environment from anywhere in the world. We can even run stress tests remotely. If a failure does occur, the VLX has the capability to automatically dial out to remote centers anywhere in our worldwide network.

THE SYSTEM KNOWS THE SYMPTOMS.

Expert systems software, using fault analysis, directs the problem diagnosis systematically. It also allows us to analyze it and shorten service time even more.

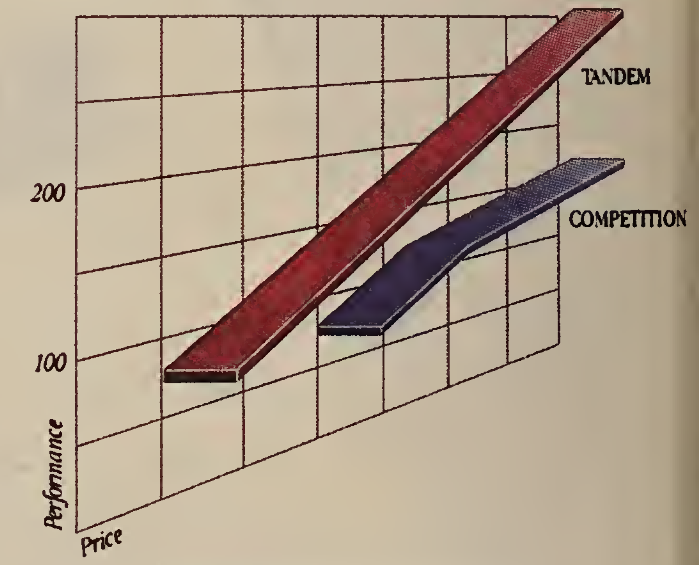


SECRETS ARE SAFE.

We offer software that will protect the security of your data whether it's in the VLX, in another Tandem system or in transmission.

NO GROWING PAINS.

To add power, just add processors. You can grow from a base four-processor system to 16. From there, you can expand in whatever increments you choose, all the way to 255 systems. You never buy more than you need, and you'll never have to rewrite a line of applications code.



NO-FAULT INSURANCE.

Tandem systems achieve fault-tolerance with a unique, parallel processing architecture. There are no idle back-up components. Instead, multiple components share the workload. If one goes down, the others pick up the slack, and application processing is uninterrupted.

HERE TODAY. HERE TOMORROW.

The VLX is compatible with any Tandem system and with all major communications standards—SNA, X.25, MAP and O.S.I. And by acting as a gateway to other vendors' systems, the VLX can link them and enhance their value as well.

WE HAVE EXCELLENT REFERENCES.

Tandem systems are at work for Fortune 500 companies in banking, telecommunications, manufacturing, transportation, retailing and energy, as well as several branches of the U.S. Government.

To find out what we can do for you, call 800-482-6336 or write to us. Corporate Headquarters: Tandem Computers Incorporated, 19191 Vallco Parkway, Dept. 762-M, Cupertino, CA 95014

TANDEMCOMPUTERS

How to sell good ideas

What to do if your 'Aha!' is met with a 'Ho hum'

BY DAVID LINDO

Kevin Blackstone, husband, father and employee, asserts, "I don't worry about anyone stealing any of my good ideas. I've found that to get folks to actually use any one of them requires an act of Congress. And most of the time, that doesn't help either."

Blackstone's point? Having ideas is easy. Selling them is the tough part.

It takes considerable effort and persistence to get a "great" idea heard by other people. And it's even harder to get ideas accepted, acted upon and implemented.

What happens to your cost-shaving, efficiency-boosting, time-saving, fun-loving ideas at home, work or play? What happens when you mention these ideas to the significant others in your life? Are your ideas met with instant acceptance or a ho-hum response? Do you think no one listens to you? Or maybe you've stopped having good ideas altogether because you haven't learned how to sell them?

The right way

There is a right way for you to sell your ideas. The problem is that the right way changes depending on the situation, available resources, your timing and the other people involved.

It takes a very real skill to know how — and when — to suggest, support and then sell an idea.

The process of selling your ideas can be as simple as A-B-C; that is, "Ahas!", Benefits and Costs. When you look at it from this perspective, you can develop the skills that will consistently attract an attentive audience to your ideas from your family, boss, peers and friends.

Good ideas start with "Aha!" When was the last time you made a discovery that was so exciting and new to you that you mentally, or even orally, exclaimed, "Aha!"?

It was probably when you logically connected two disconnected thoughts, tools or techniques. You saw a new way, a different approach, a change in routine, an opportunity where none previously existed.

But having felt your flash of inspiration, what did you do about it? If you are like other people, you immediately shared it with someone. And then the idea died on the spot. Why? Because you didn't take the time to consider the benefits and costs involved.

Unfortunately, there always seem to be more good ideas than any individual or organization has the time or money to act upon. When these brainstorms surface, they must compete for attention, resources and corporate commitment. As a result of this competition, most ideas stumble over these objections and die an early death.

What they'll say

Your detractors will say something like the following:

- "We've already tried that."
- "We don't have enough money."
- "It will never work here."
- "It doesn't do anything for me."

If you don't offer instant answers, the moment passes, and the idea dies.

Lacking instantaneous answers and ill-equipped to handle objections, most people are unwilling to risk pursuing their ideas further. Often, the idea person vows he will never waste another brainstorm on that ungrateful boss, uncaring spouse or unappreciative other. Think of the good ideas that have been lost forever to this kind of vow.

Individuals who consistently manage to sell their ideas do not throw up their hands in despair at initial rejection. They maintain an "Aha! file" composed of brainstorms that weren't instant winners.

This file is often nothing more than a collection of index cards upon which the persevering employee jots the following information: the subject or category; date; a brief description of idea; the event, learning opportunity, cause or change that triggered the idea; and the reasons or objections given — or assumed — for rejecting the idea.

The persistent idea seller then reviews the cards on a monthly basis to determine what, if anything, has changed since the original idea was offered. He may add data as time passes.

When a significant change or event occurs — with customers, management, money, schedules, requirements or capacity — the employee suggests his idea again, indicating why it is even

CHRIS DEMAREST

Lindo is president of LAD Enterprise of Burnsville, Minn., a management consulting firm. He writes frequently on management, personnel, decision-making and financial control topics.

- **Sometimes, you can't give 'em away**
- **Persistence pays off**
- **Meeting individual ego needs**

more pertinent and timely this time around.

Idea sellers don't say, "I told you so." Instead, they assert, "The reasons this is a good idea can now be supported by a review of current events." The result is that persistent idea people begin to sell their ideas the second or third time around.

What good is it?

Successful idea sellers also focus on benefits. Ask yourself, Can I identify the benefits my idea will produce? How will my idea benefit those affected by it? Where exactly will the anticipated improvement occur? When will the desired results be captured and for how long?

Moreover, ask specifically how the idea enhances current operations. What facts, figures and proofs will it take to convince opponents that your idea is a good one? Who will get credit — both recognition and rewards — for its implementation?

Look also at why your idea should be implemented now, as opposed to six months or two years from now. Be willing to demonstrate why your particular implementation plan is the best approach. And ask yourself how the risks that are associated with using your idea will be managed.

If you don't think it is your responsibility to supply answers to these questions, think again. Decision-makers need something more than faith in you. They need something solid to hang their hats on before they act on your ideas.

If nothing else, specifically highlighting the benefits that someone could expect to receive from supporting your idea convinces your superiors that you have their best interests at heart. This is your sales pitch.

Without clearly defined benefits, the best idea in the world is nothing more than another brainstorm.

Worrying about the green

Finally, getting an idea approved requires cost awareness. Recognize that managers' acceptance of your idea involves their willingness to absorb many potential costs — costs that may mean a whole lot more than dollars and cents.

Critical cost factors include the need to satisfy customer support concerns, meet corporate quality requirements, achieve the scheduling commitments and respond to the ego needs of the people who are involved. Particular attention must be paid to the individual egos of those whose support and approval you need for a successful sale.

> BEFORE you blurt out your solution — even your brilliant solution — to the next problem that comes along, consider how it will effect personal, organizational and societal costs.

So before you blurt out your solution — even your brilliant solution — to the next problem that comes along, consider how it will effect personal, organizational and societal costs.

Your checklist of questions should include the following:

- How much money will this cost, and how much will it save?
- How much time will this add or subtract to daily operations or long-term projects?
- Will this help or hurt customers in the short run? In the long run?
- Will this make my boss (or significant other) look good or bad?
- Do I expect a positive or negative response from my peers?
- Is this more or less work for me? For others?
- Is it legal?
- Is it ethical?
- Is the timing good?
- Will it bring me closer to success with my personal goals?

The results of this cost analysis will provide you with evidence to support the benefits you claim for your idea — not only benefits for you but for your family and organization as well. And it will help you identify the right approach for your specific idea in your specific circumstances.

So when the next "Aha!" occurs to you, take some time to prepare your sales campaign. Do a cost/benefit analysis. Prepare concise, well-organized responses to objections and arguments that are sure to occur. Highlight how your idea will produce clear-cut benefits at a reasonable cost, in terms to which everyone can relate.

Your idea/approval success ratio will climb, and your star will rise too. Start today. The idea you just had may be your key to long-term personal success. •

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FASTBACK
PLUS
Backup software for your hard disk.
JUST UNLEASHED

More Power, More Performance, More Versatility!

Fifth Generation Systems, creator of the world's leading backup utility, has just unleashed FASTBACK PLUS, the **next** generation of power and performance in backup products. FASTBACK PLUS is even faster than its predecessor, and even easier to use. The new **data compression** feature can actually cut the number of disks you use in **half**.

FASTBACK PLUS is as flexible as it is fast. You can now backup and restore from any DOS device including DOS-compatible tape. And with the touch of a key you can record and playback any backup scenario. With FASTBACK PLUS you can backup 10 Megabytes in an incredible 4 minutes or select and back up an individual file in just a few seconds.

FASTBACK PLUS' speed and ease of use actually encourages frequent backups. As one reviewer put it, "If it's not FASTBACK, you won't use it."

So don't wait for a hard disk disaster to decide that your data needs the best protection. See your computer dealer today and unleash the power and performance of FASTBACK PLUS, the leader in data insurance.

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Sales Offices: 1322 Bell Ave., Ste. 1A, Tustin, CA 92680
(800) 225-2775 or (714) 259-0541

For registered FASTBACK users who would like exchange information please call (504) 291-7681.
Requires 448K RAM and MS-DOS 2.1 or higher.
† On high density media. Time typically doubles with low density media.
* This product is in no way associated with or has origination in Fisher Scientific or Allied Corporation. MS-DOS is a trademark of Microsoft Inc.

MANAGEMENT

TAKING CHARGE

Michael Sullivan-Trainor

Strategic units target DP

In many corporations, MIS executives charged with integrating computer systems with the rest of the business face resistance from line managers who see those efforts interfering with their operations. At the heart of the objections is the traditional organization of divisions within companies along functional lines.

Such functional barriers immediately create turf issues. For example, when the information systems executive provides a strategic application for the sales division, who owns the application and the data it requires?

Logically, MIS expertise is required to operate the application and associated systems at maximum efficiency. But the data and the product of the systems are clearly the possession of sales. Despite the efficiency provided by their intervention, the sales executive may look upon the involvement of MIS with the application as an invasion across his functional boundaries.

One solution advocated by supporters of a more dynamic business structure is to reorganize into strategic business units. Instead of requiring information systems to be one functional organization and sales another, aspects of both

Continued on page 54

Heavy metal in the Steel City

DiNardo brings an iron fist to productivity of people and processors

BY CLINTON WILDER
CW STAFF

"I am a big-iron bigot and no one's going to change my ways."

PITTSBURGH — The framed quote hanging on the wall of George DiNardo's conference room — a gift from one of his banking industry MIS colleagues — came from a speech DiNardo made a few years ago. In 14 words, it encapsulates the philosophy and the personality of one of the corporate MIS community's most dynamic and colorful members.

In his 18 years as the top information systems executive at Pittsburgh's Mellon Bank NA, 50-year-old DiNardo has emerged as a leading advocate of the corporate computing philosophy that stresses bigger, faster and better mainframes. But what is sometimes overlooked in that philosophy is the productivity DiNardo demands from his big iron — and from his people.

"George has been an enormously positive influence on the entire industry," says Naomi Seligman, director of the The Research Board, Inc., a prestigious New York association of some 50 top MIS executives. "He's provocative, intelligent and knowledgeable. He's provided very good guidance to our members, especially on productivity issues" (see story page 52).

At a time when Mellon's ill-fated Third World and oil industry loans have necessitated corporate belt-tightening, DiNardo's strong-willed emphasis on productivity is particularly germane. He demands a lot from his people — and gets it.

"I think he does it by [employing] a loyalty factor," says Dick Bryant, vice-president of corporate application systems, who has worked at Mellon for 17 of the 18 years DiNardo has. "He screams and shouts around a lot, but he stands behind his folks. People will work 16 hours a day

Continued on page 52

PROFILE

George DiNardo

Position: *Executive vice-president, Information Management and Research, Mellon Bank NA.*
Mission: *Delivering DP services to Mellon and other banks; extracting productivity from computers and staff.*

Data View

Quitting time

Lack of growth tops concerns that would prompt Computerworld *readers to quit their jobs**

	PERCENT ANSWERING
Advancement/lack of growth at current job	22%
Boredom/more challenging position	14.6%
Inept management (including lack of communication, recognition, support)	15.4%
Money	12.7%
Location/relocate	3.8%
High pressure unrealistic deadlines	3.6%
Frustration	2.1%
To start own business	1.9%
Commute	1.9%
Retirement	1.7%
Work load	1.2%
Other	18.4%

*Based on 577 responses to a survey

INFORMATION PROVIDED BY IDG COMMUNICATIONS, INC.
CW CHART: FRANK C. O'CONNELL

Humbug: Bonuses seen less merry this year

BY DAVID A. LUDLUM
CW STAFF

Year-end bonuses are bringing less holiday cheer than in recent years to many information systems professionals and managers.

Listen to what they are saying at E. F. Hutton & Co., where financial woes aggravated by October's stock market downturn have driven the company into a merger with Shearson Lehman Brothers, Inc.

Last week, E. F. Hutton President Robert Rittereiser tried to quell turmoil stirred by reports that the brokerage giant would not pay year-end bonuses in the wake of the merger.

Through a statement, Rittereiser tried to assure employees that the company would begin reviewing the performance of workers eligible for bonuses this week and, as usual, make the payments early next year.

But bonuses for professionals at E. F. Hutton will be significantly lower than last year because of the firm's predicament, company spokesman Bob Sharkey said.

Sharkey said that as at many other Wall Street firms, bonuses for systems employees are based on performance evaluations, but he could not say how big the bonuses might be this year, citing the confusion generated by the merger.

Roger O'Conner, a spokesman for compensation consulting firm Edward Perlin Associates, Inc. in New York, said that bonuses at securities firms

Continued on page 54

We've installed over 2 billion bytes of 308X memory.

Cambridge Memories has provided memory for four generations of IBM® mainframes, right through 308X systems. We've served a list of customers that includes virtually all of the 50 largest data processing operations in the United States.

Our STOR/8000™ universal memory modules fit any 308X, and they're proven products that we've been shipping for three years. For information on pricing, leasing and upgrade plans, service, and available life-time warranty, call Ed Breslow or Michael Brody at (800) 325-5565. In Mass., call (617) 890-6000.

CAMBRIDGE MEMORIES
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Heavy metal

CONTINUED FROM PAGE 51

for the guy. He's tough but fair."

"You have to [emphasize productivity] if you're in the business that we're in," DiNardo says. "If we were just doing work for Mellon, it wouldn't be a hell of a lot of difference if I used 10% more iron — the price of iron goes down each year. But we're servicing 500 banks in every state in the union, and it will be 700 next year. Every dime you can squeeze out of that, especially the on-line systems, means we make a buck."

DiNardo says that will add up to some $700 million in data processing services revenue for Mellon this year. Quite an empire for a Rensselaer Polytechnic Institute graduate who entered the banking business very much by accident.

DiNardo was about to apply his master's degree in management science to a career at a refining company when he learned through his father that New York's Bankers Trust Co. was forming an operations research group, which intrigued him. At Bankers Trust, he cut his teeth on Basic programming, dealing with IBM and managing a system of 700 tellers — all at the age of 26. "Then the IBM 360 came out," DiNardo recalls with a smile, "and I was on my way."

In 1969, Mellon came calling with a job offer at the vice-presidential level. DiNardo debated a move to Pittsburgh but was impressed by Mellon's early reputation as a computer pioneer in banking and excited by the opportunity to get in on the ground floor in forming Mellon's information systems strategy.

Preaching two gospels

The challenge of creating something from the ground up has always been a motivating factor for DiNardo, and he says he expects it will continue to be. He will be eligible for early retirement from Mellon in five years and has considered a second career as a consultant or entrepreneur based on his expertise. "I'll still preach the two gospels: programmer productivity and big iron," he says, "but there will be a life after Mellon."

In the short term, however, DiNardo has a heady challenge as Mellon tries to restore its traditional growth and profitability while demanding more than ever from its information systems resources. "I basically have to do 5% more with 13% less," he says. "I'm working harder than I ever worked in my life. But I'm enjoying it, because we're winning."

DiNardo likes to help others win, too. The father of five sons, he has coached Little League baseball, youth football and soccer. He is also active in the administration of the athletic association in his suburban hometown of Upper St. Clair, Pa. "I get so busy, I need my wife to get me on the golf course," he laughs.

Those who work for DiNardo admit he has an iron fist to match his big-iron philosophy, but they also appreciate his directness. "He's the most honest, straightforward guy I've ever worked for. You always know where you stand. That's something I really value," says David Moore, Mellon's senior vice-president of information processing.

"I think he's fired me about five times but [always] reconsidered," Mellon's Bryant says. "You always know what's on his mind because he always verbalizes it." Moore is not surprised that Bryant claims to have been fired five times. "I think I'm up to about 27," he says. "But I've been here longer."

The helmet and the hog

A visitor to George DiNardo's downtown Pittsburgh office may find some unusual artifacts. For example, there is the brass-spiked Prussian general's helmet on the windowsill behind his desk and, hidden in a nearby desk drawer, a framed photo of a hog.

Both items are symbols of DiNardo's devotion to the productivity of his programming staff. The helmet was given to him by staff members as a souvenir of his drill sergeant approach to the issue. The pig picture, he explains with a fiendish smile, is something he presents at staff meetings to programmers whose applications eat too much code. "Everything we do here is run through efficiency filters," he says. "And I'll flat-out outrun anyone in the U.S. on price/performance on equipment."

A key to much of the bank's applications development is a proprietary programmer's workbench program developed at Mellon. Another is reusable code, such as an interest calculation module that can fit into a home mortgage program as easily as one for commercial loans.

The growth path for DiNardo's programmers usually leads into a Mellon business unit. "I have less than 5% turnover, and that includes our 'quality fix' weeding-out process. The worst that could happen, if everyone were to move up and out, is that I'd have friends throughout the organization," he says.

CLINTON WILDER

THANKS

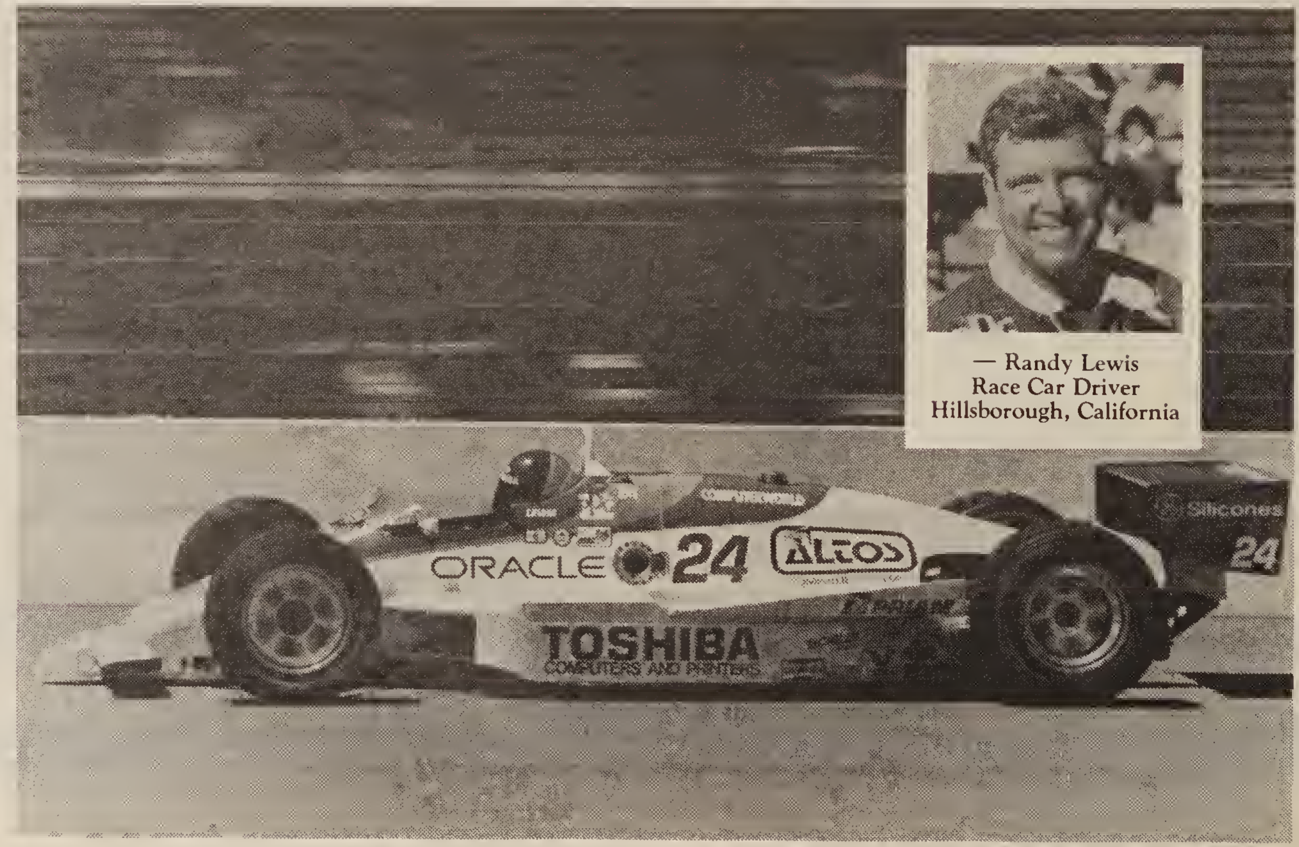
to 'The High-Tech Team' for a fast start.

The driver of the first Indianapolis 500 race car to be sponsored entirely by high-tech related companies wants to take this opportunity to thank his 1987 sponsors.

Randy Lewis, who raced at Indy for the first time this year in his 1987 March Cosworth, thanks sponsors *Computerworld, InfoWorld* and International Data Corporation, along with Toshiba, Altos, Oracle, and Priam for their help in making it all possible.

"I couldn't have done it without 'The High-Tech Team,'" says Randy. "And 1988 will be even better." We don't doubt it for a minute, Randy.

If you would like to become a member of The High-Tech Team in 1988, call Randy at (415) 342-8017.



— Randy Lewis
Race Car Driver
Hillsborough, California

COMPUTERWORLD

An IDG Communications Publication

THE first time Tom Leffler and his team from Unisys met with Home Shopping Network they recognized a big idea whose time had come.

The idea was to start up a national cable TV channel to retail products directly to consumers. People would pick up the phone and order anything from garden hoses to diamond rings, right from their easy chairs, any time, night or day.

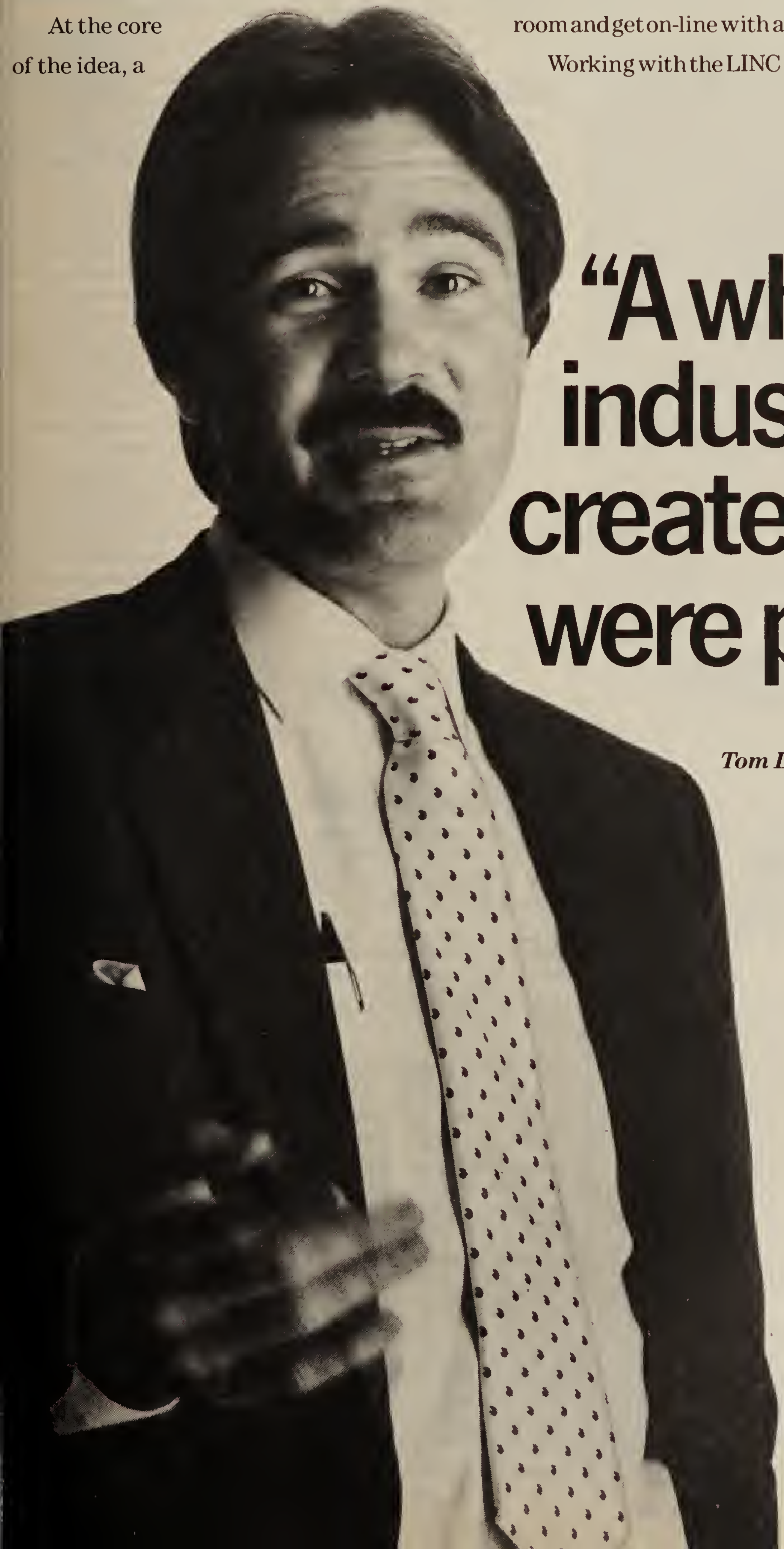
At the core of the idea, a computer system. A system that could satisfy their immediate needs, but could also grow, and fast. There would be no time for software conversions. And, if that system wasn't in place on time, that window of opportunity would slam shut.

"We started working with HSN in April 1985. They were scheduled to go national on July 1, 1985. There were three months to rewrite an application, build a computer room and get on-line with a national system."

Working with the LINC productivity tool and nine Unisys professionals, HSN had a working application in 90 days. In the next 18 months, they'd grown from zero revenue to almost $700 million. "And they'd grown from our smallest mainframe to our largest computers. It's been incredible.

"But, you know what really won us the business: Unisys' entrepreneurial attitude and a willingness to get things done. We accepted our challenge to be a part of the whole plan."

Unisys and distribution. The power of ^{2}.



"A whole new industry was created and we were part of it."

Tom Leffler, Marketing Manager, Unisys.

UNISYS

The power of ^{2}

Humbug

FROM PAGE 51

are likely to amount to 7% to 25% of annual salary for systems employees this year, down from about 15% to 45% last year.

'Much more bleak'

The bonus outlook for the securities industry as well as banks and other financial securities institutions is "much more bleak than last year," O'Conner said. "Quite frankly, it's going to be less."

Bonuses are trickling down in the organizations to lower level employees, O'Conner noted, and many firms will reward the work of project teams or groups rather than individuals.

As brokerages and investment banks have been hit by the stock market drop, many large banks are suffering losses from huge reserves set aside to offset shaky loans to less developed countries.

"We lost a ton of money this year" on loans to less developed countries, said a systems executive at a major bank. "Some of the banks had tremendous write-offs to bring those into some semblance of sanity."

As for bonuses, "they are for when you make a profit. We will not make a profit in the year 1987," the executive said. The bank's financial situation is serious enough that employees understand the need for austerity, although "they don't understand forever," he added.

The economic picture is less gloomy for some other companies, including many manufacturers. A-DEC, Inc. in Newberg, Ore., a privately held manufacturer of dental equipment, awards a bonus as a percentage of salary to all employees based on company earnings and is enjoying its 22nd consecutive year of growth, according to DP manager Michael Assad. He declined to characterize this year's bonus.

Christmas bonuses at one major manufacturer of chemicals and pharmaceuticals are based on a percentage of salary that rises with a worker's length of service, starting at 1.5% and reaching 5% after eight years, according to a systems executive who requested anonymity.

Tough times for toys

The toy industry, however, had a rough year. HG Industries, Inc., a Long Beach, N.Y.-based maker of inexpensive toys, "will not be giving out bonuses this year," said Robert Reh, vice-president of information systems.

At The Boeing Co. in Seattle, year-end bonuses called "lump sum productivity payments" are set by labor contracts. One contract calls for technical workers, including those at Boeing Computer Services, to get productivity payments of 5% of their salary this year, down from the 9% contracted rate last year.

Engineers at Boeing also got 9% payments last year but are slated for none this year, company spokesman Lee Lathrop said. Boeing managers share in a merit pay raise fund that is disbursed in April and October.

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Sullivan-Trainor

FROM PAGE 51

would be included along with other essential functions within a strategic business unit.

The unit would provide the functions necessary to serve the needs of a particular segment of customers.

Each strategic business unit executive would run his own sales, information systems or clerical subunits — independent of any central organization that formerly had total functional control.

At one large Midwest insurance company, information systems executives back the concept, while on the other side, line managers see information systems unnecessarily duplicating their operations functions.

For example, a pilot strategic business unit, which sprouted from the company's information systems division, performs the same type of claims processing functions as the operations division but serves a different set of customers. MIS executives argue that providing identical services in various divisions offers a better focus for the units as well as a single point of contact for customers.

The evolution of information systems may require both a central MIS operation serving a functional purpose and strategic business units to effectively implement complex data networks connecting the divisions of the company and the company's suppliers and customers.

Strategic business units may be an enhancement of the functional organization rather than a threat. And, in reality, some aspects of the business will require centralized control, while others may be more effective as independent units.

Sullivan-Trainor is a *Computerworld* senior writer.

CALENDAR

JAN. 10-16

77th Annual National Retail Merchants Association Convention. New York, Jan. 10-13 — Contact: Registrar, NRMA, c/o Galaxy Conferences, Inc., P.O. Box 3918, Frederick, Md. 21701.

International Symposium and Exposition on Electronic Imaging Devices and Systems '88. Los Angeles, Jan. 10-15 — Contact: Society for Imaging Science and Technology, 70003 Kilworth Lane, Springfield, Va. 22151.

Neural Network Applications Conference. Los Angeles, Jan. 11-12 — Contact: Russell Webb, Institute for International Research, Inc., Suite 1212, 310 Madison Ave., New York, N.Y. 10017.

10th Annual Conference on Computer Graphics. San Diego, Jan. 13-15 — Contact: Carol Every, Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

Designing the Debit Card Account. Miami, Jan. 13-15 — Contact: Meeting Coordinator, Electronic Funds Transfer Association, Suite 1000, 1726 M St. N.W., Washington, D.C. 20036.

Strategic Planning for New Technologies: The Role of the Planner in the 1990s. New York, Jan. 15 — Contact: Aida Rivera, Executive Programs, 1221 Avenue of the Americas, New York, N.Y. 10020.

Commtex International '88. New Orleans, Jan. 16-18 — Contact: International Communications Industries Association, 3150 Spring St., Fairfax, Va. 22031.

JAN. 17-23

Third Conference on Hypercube Concurrent Computers and Applications. Pasadena, Calif., Jan. 19-20 — Contact: Patricia McLane, Jet Propulsion Laboratory, MS 180-205, Pasadena, Calif. 91109.

1988 Optical Disk Systems Conference. Phoenix, Jan. 20-22 — Contact: Jean O'Toole, CAP International, One Snow Road, Marshfield, Mass. 02050.

Third Annual Technology In The Law Practice: The Lawyer's Personal Workstation. Dallas, Jan. 20-23. — Contact: The Conference Desk, Inc., 3701 Fairmount St., Dallas, Texas 75219.

Military and Space Graphics: New Applications and Future Requirements. Cape Canaveral, Fla., Jan. 21. — Contact: Tanya Wilson, National Computer Graphics Association, Suite 200, 2722 Merrilee Drive, Fairfax, Va. 22031.

JAN. 24-30

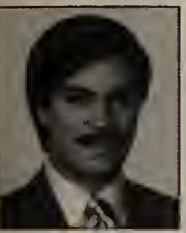
Conference on Interactive Videodisk Systems. Clearwater, Fla., Jan. 24-26 — Contact: Institute for Graphic Communication, Inc., 375 Commonwealth Ave., Boston, Mass. 02115.

COMPUTER INDUSTRY

INDUSTRY INSIGHT

Clinton Wilder

The industry year in lists



'Tis the season to make lists — and not all of the kind presented to or written by Santa Claus.

It is also the time when we media types feel the uncontrollable urge to wax poetic about the year's 10 best movies or 10 worst-dressed women. The newsstands are already deluged with Tammy Bakker, Donna Rice, Spuds McKenzie and all the other media personalities of 1987 that we'd just as soon forget.

Those of us who cover the computer industry, however, like to think we approach things more seriously — most of the time. But in the spirit of the season, we do get a bit reflective as we look back on the last 12 months of mergers, market shares and megabytes. We feel there is some value in an unofficial chronicle of industry happenings in 1987.

Besides, we did it last year.

The top 10 industry stories of 1987:

1. Computer Associates' acquisition of Uccel.
2. The IBM-Fujitsu arbitration settlement.
3. The IBM Personal System/2 introduction.
4. The stock market crash.
5. The official formation of Honeywell Bull.
6. Continental Information Systems' takeover of CMI to create a computer leasing giant.
7. Major consolidations in the communications industry, highlighted by 3Com's acquisition of Bridge Communications and Unisys's buy-out of Timeplex.
8. IBM's Systems Application Architecture and Applications Software Division announcements.
9. DEC's continued mid-range success and its mainframe-power VAXs.
10. The data base/SQL wars, from high end to low.
11. Memorex's acquisition of Telex (late entrant this week).

Rising stars in the corporate MIS market:

1. Apple.
2. Sun Microsystems.

Continued on page 58

It's sink or swim for Tandon

Must up market share, keep on edge of PCs after disk drive division sale

BY JAMES A. MARTIN
CW STAFF

CHATSWORTH, Calif. — By selling its Winchester disk drive business to Western Digital Corp., Tandon Corp. is taking a gamble. It is a gamble that could either win the company a strong position in the microcomputer business or leave it languishing behind some of the most cutthroat competition in the computer industry.

"They have skinnied down to compete in one race instead of two," observed Mark Obenzinger, a computer industry analyst for Wood Gundy Corp. in New York. "If they don't make it in the PC business, maybe they can sell umbrellas."

Earlier this month, Western Digital, a growing microcomputer chip set and peripheral components supplier in Irvine, Calif., announced it would acquire Tandon's hard disk drive business for between $40 million and $45 million [CW, Dec. 14].

As a result, Western Digital will gain a consistent source of disk drives to complement and expand its intelligent storage products. Tandon, meanwhile, will be able to narrow its focus entirely on IBM Personal Computer compatibles.

"The sale of this business group leaves us totally in the PC business," said Mike Sanders, corporate communications manager for Tandon. "The cash will be directed to expanding our manufacturing capabilities and dealer networks."

Tandon's presence in the 3½-in. Winchester disk drive industry has been dwindling recently, while micros have played an increasing role in the company profile.

During the quarter ended Sept. 30, systems sales accounted for 70% of all Tandon earnings, with disk drives accounting for 30%, Sanders said. For the fourth quarter, ending Dec. 31, Tandon predicts that 85% of its revenue will come from micros and 15% from disk drives. In contrast, Tandon's PC compatibles made up 60% of sales in the final quarter of 1986.

Disk drives didn't pan out

"The disk drive industry was Tandon's strength in the beginning, but that business never really grew for them as much as they would have liked," said Steven L. Ossad, an analyst with County Securities Corp. U.S.A., a Wall Street investment banking firm. "The disk drive business provided Tandon with an advantage in the systems area, and I think this agreement preserves that."

As a result of divesting its disk drive group, Tandon becomes one of dozens of PC-compatible manufacturers whose success depends entirely on achieving an edge in that highly competitive industry. Although Tandon's Targa and Pac 286 are considered reliable products, the company's PC market share has been slight to date.

According to Dataquest, Inc., Tandon held only 1.29% of the U.S. IBM PC-compatible market this year and 1.26% worldwide, ranking near the bottom in terms of market presence. Among other players with similar shares were Toshiba Corp., Unisys Corp., Kaypro Corp. and Panasonic Industrial Co.

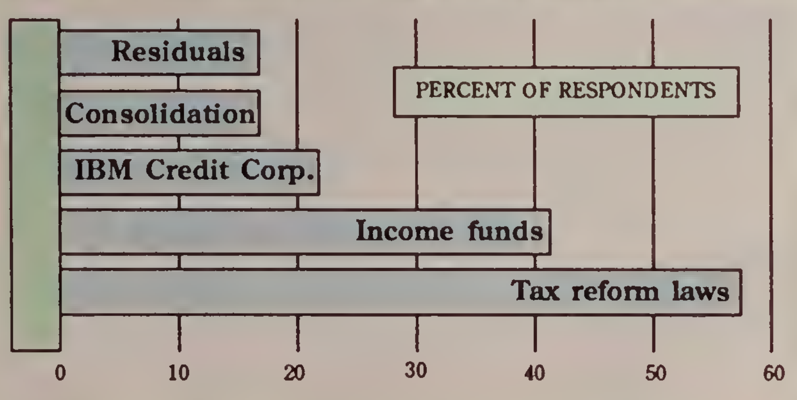
Although Tandon's future success in the PC industry is uncertain, most analysts said they believe the company's divestment of the disk drive business in favor of micros was a solid move.

"The disk drive industry is highly competitive, and Tandon had a string of somewhat questionable profitability from that," Ossad said. "They were having to finance two areas, and they had to make a choice between them. They had a willing buyer and a good customer relationship with Western Digital, and it turned out to be a good deal for both involved."

Data View

Leasing industry's major concerns

Issues most cited by lessors in Computer Dealers and Lessors Association's 1987 survey of its members



INFORMATION PROVIDED BY THE GARTNER GROUP, INC.
CW CHART

Business groups back standard tariff coding

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Two of the computer industry's major regulatory problems will be solved once Congress passes an obscure bill implementing a standardized coding system for international trade, according to industry lobbyists.

However, the bill for the Harmonized Commodity Description and Coding System is tied up in a package of controversial trade legislation that may not pass until next year.

The Computer and Business Equipment Manufacturers Association (CBEMA) and other business groups support the Harmonized System because it would replace a hodgepodge of international tariff codes with standardized, six-digit codes

Continued on page 58

Kroger, top Sperry executive holdover, resigns Unisys job

BY CLINTON WILDER
CW STAFF

BLUE BELL, Pa. — Joseph J. Kroger, the top-ranked former Sperry Corp. executive at Unisys Corp., has announced his resignation as Unisys's vice-chairman, effective at the end of the year.

Kroger, 53, was not available for comment last week. His resignation will coincide with that of Unisys President Paul G. Stern, the former Burroughs Corp. president.

Kroger was president of Sperry when it was acquired by Burroughs to form Unisys in 1986. Sperry Chairman Gerald Probst resigned shortly after the merger, but Kroger remained, and his presence was considered critical for a smooth transition in integrating the two companies.

Kroger's departure leaves Jan Lindelow, the 41-year-old senior vice-president of corporate marketing, as the highest ranking Unisys official who came from Sperry.

Kroger's resignation removes another potential successor to 61-year-old Unisys Chairman W. Michael Blumenthal. Although Blumenthal said recently that his retirement is not imminent, speculation about a successor had centered on Stern, Kroger and Executive Vice-President James Unruh.

Joseph J. Kroger

Stern's resignation last summer was viewed as an indication that Stern felt he would not be chosen to succeed Blumenthal. Kroger's departure implies similar sentiments on his part, according to Unisys observers.

Unisys did not name a replacement for Kroger.

Kroger rose to the top of the Sperry hierarchy after a sales and marketing career in the former Univac division. He began as a sales representative in 1960 and became president of computer systems in 1981, president of information systems in 1984 and president and chief operating officer of Sperry in 1985.

GATE

“I called three times and got cut off three times. Then I thought, what if I'd been a customer? Would I have bothered?

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SUPERSHORTS

Cray Research, Inc. announced that the design and development agreement with Seymour Cray it entered in November 1981 — and extended in 1983 and 1985 — has been extended to Dec. 31, 1992. The extension relates to the developer's decision to begin work on the design of a new supercomputer, the Cray-4.

Cray said he anticipates the Cray-4 will have 64 CPUs and a CPU cycle time of 1 nsec. The performance objective for the system is to provide throughput more than 1,000 times greater than that of the Cray-1 system, which was introduced in 1976. The Cray-4 reportedly will be based on gallium arsenide circuitry.

Under the design and development agreement, Cray will act as an independent contractor to the company, furnishing development work for its advanced computer systems. The agreement may be extended by additional projects.

John Cocke, an IBM Fellow at the **Thomas J. Watson Research Center** and the inventor of reduced instruction set computer (RISC) technology, has received the 1987 ACM A. M. Turing Award. The award is the Association for Computing Machinery (ACM)'s highest honor for technical contributions in computing. Cocke was cited for his contributions to three areas of computer science: the development of RISC machines, the design and theory of compilers and the architecture of large systems.

Iomega Corp. announced it signed a settlement agreement with **Eastman Kodak Co.** The settlement addresses certain claims Kodak made in a lawsuit against Iomega arising from a contractual relationship under which Kodak, through its Spin Physics Division, was supplying read/write heads to Iomega.

Under the terms of the settlement, the lawsuit brought by Kodak against Iomega will be dismissed with prejudice, and Iomega has agreed to issue Kodak a note and preferred stock totaling $5.6 million. Included in this amount is about $1.8 million for the payment of certain past due accounts payable, about $2.3 million for certain contract cancellation costs and about $1.5 million for the purchase of inventory and equipment.

Nippon Telegraph & Telephone Corp. (NTT), the world's largest telecommunications company, has established a U.S. subsidiary to replace its existing liaison offices in New York and Los Altos, Calif.

The new company, called **NTT America, Inc.**, will be based in New York and headed by **Keiji Tachikawa**, who until now had served as the general manager of the NTT New York Representative Office. NTT America will facilitate NTT's procurement activities and coordinate technological and other cooperation between NTT and companies in North America.

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Wilder

CONTINUED FROM PAGE 55

3. Arthur Andersen.
4. Tandem.
5. Oracle, Relational Technology and Informix Software.
6. Western Digital.
7. Duquesne Systems.
8. For technologies: computer-aided software engineering, Unix, network management and computer-integrated manufacturing.

Casualties of 1987:

1. Fortune Systems.
2. Enmasse Computer.
3. Lisp Machine.
4. Canaan Computer.
5. Culler Scientific Systems.
6. Telefile Computer Products.
7. Honeywell, Inc. as a computer company (except for federal business).

Moving out in 1987:

1. John Cullinane, Cullinet.
2. Joe Kroger, Unisys.
3. Paul Stern, Unisys.
4. Greg Liemandt, Uccel.
5. Larry McTavish, Hogan.
6. Joseph Piscopo, Pansophic.
7. Robert Miller, Data General.
8. Jeff Kalb, DEC.
9. Eugene Manno, Honeywell.
10. Steve Chen, Cray.
11. Bob Dilworth, Zenith Data Systems.
12. Bill Murto, Compaq.
13. Tom Rattigan, Commodore.
14. James Renier, Honeywell.
15. Kent Johnson, Microrim.
16. Mitch Kapor (from the board of directors) and Mick Prokopis, Lotus.
17. Mark Shepherd, Texas Instruments.
18. John Bennett, Applied Data Research.
19. Robert Wiggins, Paradyne.
20. Paul Rizzo, IBM.
21. Edward Gistaro, Datapoint.

Moving up in 1987:

1. Vittorio Cassoni, AT&T.
2. Ray AbuZayyad, IBM/Rolm.
3. David Chapman, Cullinet.
4. James Ottinger, Digital Communications Associates.
5. Kaspar Cassani and Jack Kuehler, IBM.
6. Deborah Coleman, Apple.
7. Chuck Digate, Lotus.
8. Jerry Junkins, TI.
9. John Frank, Zenith Data Systems.
11. Robert Potter, Datapoint.

Comebacks of 1987:

1. Amdahl.
2. IBM (somewhat).
3. Wang.
4. MCI Chairman Bill McGowan.
5. Storage Technology.

Disappointments of 1987:

1. AT&T's computer business (again).
2. The National Computer Conference (again).
3. DG.
4. Symbolics.
5. VM Software.
6. Comdisco's risk arbitrage business.

Still hangin' in there:

1. Corvus Systems.
2. Encore Computer.
3. Datapoint.
4. Anacomp (but not really in the computer business).
5. Microelectronics and Computer Technology (delivered its first technology to MCC members).

Wilder is *Computerworld's* senior editor, computer industry.

Tariff coding

CONTINUED FROM PAGE 55

[CW, May 11]. The lack of a standardized system for classifying imported and exported products has inflated the administrative costs of conducting international trade, CBEMA officials said.

The mismatched coding systems have created uncertainty among trading partners and slowed the use of standardized forms and computers in international transactions, according to Dale O. Torrence, senior attorney for the U.S. Customs Service.

U.S. trading partners plan to start using the Harmonized System on Jan. 1, but the U.S. faces some embarrassment because Congress has not yet enacted the legislation for U.S. participation. Industry lobbyists have been urging Congress, without success, to separate the Harmonized System measure from the slow-moving omnibus trade bill in hopes of meeting the Jan. 1 deadline.

"Due to delays associated with budget deliberations, Congress will run out of time [on the omnibus trade bill] this year," said political analysts at E. F. Hutton & Co. They predicted passage early next year.

CBEMA officials warned that until Congress approves the Harmonized System, U.S. firms will have to maintain two different classification systems, the old U.S. tariff schedule and the new Harmonized System.

Implementation of the Harmonized System would also resolve part of the industry's problem with tariffs applied to motherboards imported for use in desktop computers.

Motherboards controversial

The Customs Service ruled in July that imported motherboards are subject to the same 4% tariffs as finished computers [CW, Aug. 10]. But the Reagan administration recently agreed to suspend the tariffs for two years under the new Harmonized System of tariffs. "It is not clear when this agreement will take effect, because the fate of the Harmonized System is uncertain," said Oliver Smoot, acting president of CBEMA.

CBEMA has vigorously opposed the Customs Service ruling, on grounds that it is standard industry practice to consider motherboards as computer parts, which are duty free. The Reagan administration's compromise agreement would resolve the issue prospectively for all motherboards except those for laptop computers.

However, the 4% tariffs will still apply retroactively to imports dating back to January 1986. CBEMA officials said this retroactive treatment is unfair and imposes a heavy financial burden on its members. "For companies that had imported boards from Japan, the financial exposure was especially serious," Smoot said, because Japanese motherboards were subject to 100% punitive tariffs [CW, Nov. 16].

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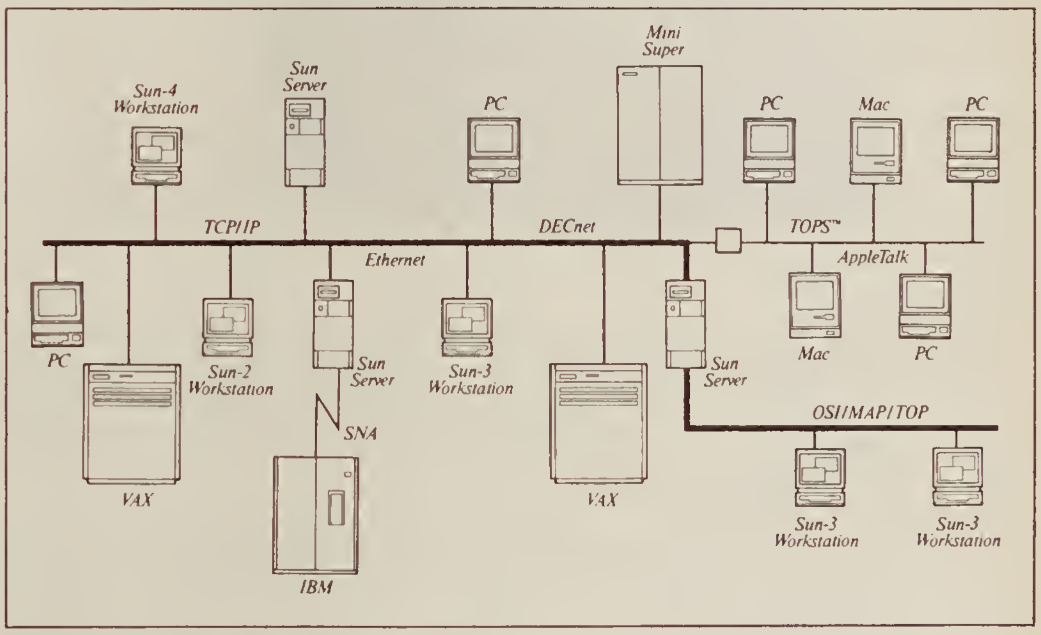

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Bjorn Nordemo
Vice President
Data Arts & Sciences, Inc.
Weston, MA

Bjorn Nordemo is Vice President of Data Arts & Sciences, Inc. (DASI), a contract software agency based in Weston, MA. Although they place people in permanent positions, DASI most often places 'contract programming personnel' — consultants who fit special niches for short or long term commitments in corporations in the New England area.

"*Our agency specializes in finding computer consultants — designers of systems, evaluators of hardware and software requirements, and computer programmers to mention a few. We recently were introduced to Computerworld as a potential source for finding these consultants,*" states Bjorn. "*I liked the idea because I know Computerworld has a broad reach — from MIS/DP directors to computer programmers, in multiple industries and multiple markets — and that's what DASI needs.*"

"*We had four specific positions for MIS/DP consultants that we needed to fill in northern New England. We used the local newspaper on a weekly basis, but people who are willing to move usually aren't reading the local Sunday paper. So, I felt this was a perfect opportunity to try Computerworld,*" says Bjorn.

According to Bjorn, he's quite satisfied with the results. "*From Computerworld, we filled 75% (3 out of 4) of the positions with the responses from the first week, and the remaining position with the response from the following week. These results alone made my ads in Computerworld worthwhile.*"

And Bjorn also recognizes a second benefit to advertising in Computerworld. "*The beauty of using Computerworld is that it's read by people in the computer industry who have a need for consultants, as well as being read by consultants who need to keep up to date on the marketplace,*" says Bjorn. "*So we not only reach qualified candidates to fill our current openings, but we are creating awareness of the services that DASI has to offer,*" says Bjorn.

"*We have some great plans for expansion and as we do, Computerworld is going to play a strong hand in helping us accomplish our goals,*" concludes Bjorn.

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COMPUTER CAREERS

Surviving the mid-career crisis

Looking at career goals as a business helps veterans adjust to new market

BY ANTHONY REED
SPECIAL TO CW

Many MIS veterans — whose skills were learned in a different era — are finding it difficult to reach the next step on the corporate ladder.

Some try changing companies, only to find themselves in their old position with their old responsibilities but going to a new building, dealing with a new manager, playing new politics and competing against new peers who have more company seniority.

Still others become frustrated and find themselves unemployed because they blew up at their manager after being passed over again or they allowed their job performance to deteriorate while they were licking their wounds.

However, if these professionals examine the factors affecting their career progress, they can take control of the future.

Crowded field

First, the baby boom generation is now firmly entrenched in the work force. There are more people competing for the same jobs than there were 15 years ago. Thus, promotions are coming slower because the younger people in management positions are not likely to be retiring very soon.

The skill requirements are also changing. For example, my first computer programmer job required only two years of college and no programming experience. Now that same job requires a four-year degree in computer science and one or two years of programming experience.

Because of changes in the international and national economies, the way companies conduct business is changing. Competition is more global than local, competing companies are merging together and fighting hostile takeover battles and once-profitable companies are filing for reorganization under bankruptcy laws.

Goaltending

Veteran professionals may not be able to control the influx of baby boomers or change the world economy, but they can control their personal career development.

To compete in today's tough employment market, job seekers must treat their careers as a business. The goal of the business is to attract customers (managers or potential employers), present a high-quality product (the professional), stay competitive (knowledgeable of the latest techniques) and get the best price (salary offer) for the product.

The professional must be proactive when it comes to handling his career. A reactive person watches a situation as it develops around him — such as new technology creeping into his department — and takes action after the process is completed. If he disapproves of the result, it is too late to change it.

Similarly, if someone gets a promotion that you felt you deserved, your company will not demote the other person and promote you instead. It is too late.

On the other hand, a proactive person tries to anticipate possible problem situations and correct or plan for them before they develop into problems. A proactive person plans his career while a reactive person just lets it happen.

The five-year plan

The first step toward proactive career development is to establish a five-year plan. The plan's objective may be to become MIS director, project manager or lead technical analyst.

Regardless of the goal, the career-minded professional should clip newspaper want ads that relate to his objective. Most of the positions may require the same number of years of experience, similar technical skills, proof of leadership or management experience, good writing and verbal communications skills and an academic degree.

If the ad states that a skill is "preferred, but not required," consider it to be a requirement, because other potential job applicants will possess the skill.

Next, the professional should conduct a thorough self-evaluation of his current skills. Throw your ego out the window and be very realistic. List the skills that relate to the future position and include your level of expertise. Review your old performance evaluations and note any deficiencies.

Now the professional should write down a plan to get the necessary skills to prepare for that future job. For each deficiency, he should write down a list of goals that will help him achieve the objective.

For example, if the position requires an MBA and you do not have one, the goal might be to take 15 credit hours for the next four years to earn the 60 credit-hour degree.

If the position requires good speaking skills, the professional should seriously consider joining the Toastmasters Club, begin speaking at their church, volunteer for speaking engagements at work or enroll in a public speaking class at a nearby college.

When you begin executing your plans, you may find yourself too busy to get frustrated over short-term problems because your long-range goal will overshadow them. Use your frustration to drive your desire to reach your goals.

Next, the professional must make himself stand out from the many people seeking the same job. Most people will join professional organizations and include them on their resumes. They will attend the national conferences and workshops to establish a good network.

> VETERAN PROFESSIONALS may not be able to control the influx of baby boomers or change the world economy, but they can control their personal career development.

A proactive professional will take an extra step and try to become a speaker at the conferences and workshops. Most conference agendas are set six months before the meeting. The speakers are solicited about nine months before the conference. So the goal would be to write the conference chairman to get information about becoming a speaker.

Be prepared to write a one-page abstract of your presentation. It should contain a problem statement, problem causes and solutions. Look at a copy of the previous year's agenda to get a feel for the topics that interest the conference attendees.

If the topic proposal is accepted, obtain permission from your manager and be sure you are not revealing company secrets.

This speaking engagement will let your current and future employer know that you are capable of public speaking and considered an "expert" in your field. You will also find it easier to establish professional contacts because attendees want to talk to the speaker to get additional information. You might also be extended other speaking engagements and get calls for consultations.

Take pen to paper

This same logic can be applied to becoming a published author. The next time you obtain a professional journal, read the biographical information about the authors. You may have the same qualifications. The only difference is that they are published. A potential employer will see this person as possessing excellent writing and analytical skills and as a leader in his field. An unpublished person's writing skills are always questionable.

Professionals who find it difficult to put their thoughts on paper should consider enrolling in a writing course or seminar. Reading professional journals will help you develop a flavor for the type of writing style editors like.

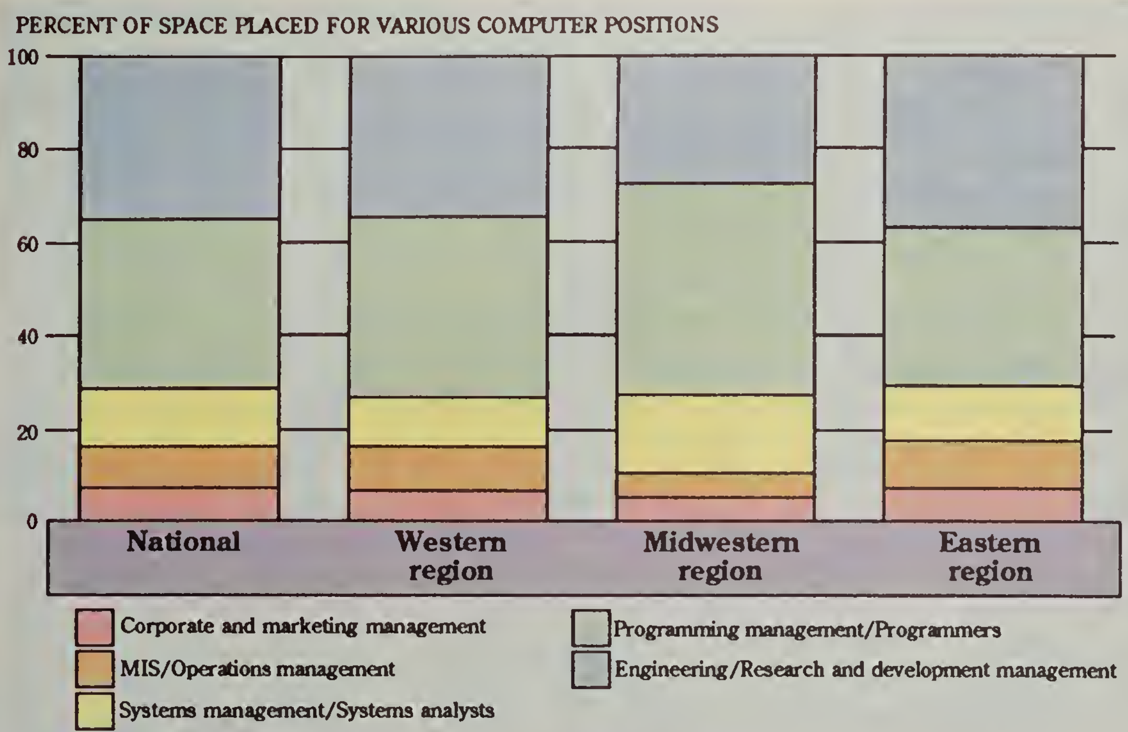
Every three or four months, evaluate your progress and seek new short-term goals. And every year, establish a new five-year plan.

If you should find yourself failing to meet your goals, just remember that while you were at happy hour last week, your company considered a takeover offer and your job-hunting competitor just earned his MBA, got an article published and was invited to speak at that national conference that your boss, who is looking to fill a new position, will be attending next week.

Reed is a Dallas-based free-lance writer and consultant.

CAREER INDEX

October 1987 computer recruitment advertising activity*



*Analysis of computer recruitment advertising space in *Computerworld* and selected U.S. newspapers

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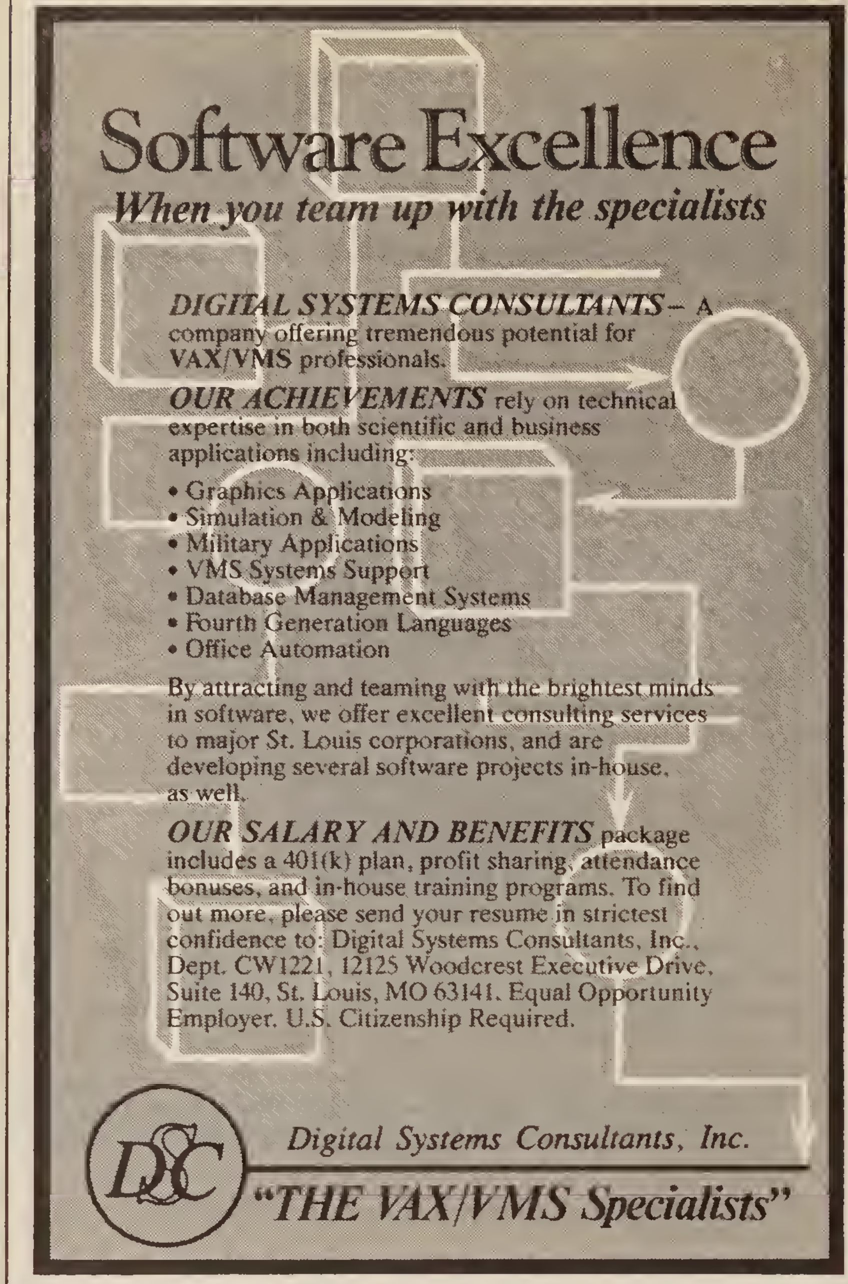

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PROGRAMMER ANALYST

Requires at least 2 years of COBOL coding experience in an IBM CICS environment and a degree in computer science or related field. The individual should have good communication skills. Experience in direct marketing systems would be a plus. The successful candidate will receive a competitive salary and benefit package plus a unique opportunity to grow with an industry leader. Send resume and salary history to:

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ACP/TPF PROGRAMMER ANALYST

Will upgrade and enhance ACP travel reservations/flight policy program to more efficient TPF software. Will analyze, manipulate and expand TPR/TPF database for faster access. All to be conducted in an ACP/TPF programming environment.

Applicant must possess bachelors degree or equivalent with major field of study in computer science, math or engineering plus 2 years ACP TPF airline environment programming. Education and experience will be found acceptable if applicant has combination of professional development courses and work experience found to be equivalent to BS degree in computer science in addition to 2 years ACP TPF airline programming experience.

Salary $17/hr. for 40 hour work week. Additional salary may be offered if applicant possesses additional education and/or experience up to $18/hr. Apply at the Texas Employment Commission, Dallas, Texas. J.O. #4422569. Ad paid by an equal employment opportunity employer.

SYSTEM VALIDATION ENGINEER: Utiliz bckgrd in UNIX, C, computer operating systems & data base theory, will design, dvlp, test, & document several components of a validation suite for proprietary layered architecture oper system. The testing areas inc inter-process communication, process scheduling, I/O sub system & memory mgmt. Analyze the results & produce reports from analysis. Formulate testing procedures, dvlp utility test tool support & be responsible for installing & maintaining test dvlpmt software. Assist in system admin inc O.S. software installations & utility programming in "SHELL" languages, & participate in system design & dvlpmnt. Master's in Computer Science. 6 mos exp on the job or 6 mos exp as a Software Engineer inc exp in software system testing in a UNIX environ & designing & dvlpng system & commun util's for multi-process environ. Must have performed O.S. software installations & dvlpd util's in "SHELL" programming languages. 40 hrs/wk. $34,700/yr. Send resume to: Job Service of Florida, 3421 Lawton Rd., Orlando, FL 32803. Attn: Order # FL 5857984

Software Engineer. Leading edge modem product line software development engineer, responsible for design, implementation, test, and documentation of micro-controller software for the performance of real time data communications tasks; including implementation of multiple data communications protocols, software interfacing with digital signal processors and host controllers. Task oriented responsibilities within a small development group under strict delivery schedules. Requires M.S. in Computer Science. Also requires: knowledge of data communications protocols incl. SDLC, HDLC, & X.25; familiarity with high level languages, especially C, & 8-bit microcontroller assembly languages; knowledge of microcontroller hardware architecture & experience with hardware in-circuit emulators, development experience under UNIX & exposure to real-time software constraints, knowledge of interprocessor communication procedures as well as host-to-peripheral interfaces. Salary: $34,000/yr. Send this ad and a resume to: Job #DD-387, Telebit Corporation, 1345 Shorebird Way, Mountain View, CA 94043. Attention: J. Brewer, no later than January 7, 1988.

SYSTEMS ANALYST/PROGRAMMER (NYC); Analysis, development, integration and implementation on unified computer systems of advertising, billing and credit checking procedures for publishing industry. Utilization of IBM Systems 34/38 and RPG II & III. $38,643/per year; 35 hrs/wk. BSc. in Computer Science or Electrical Engineering required plus 3 years prior experience. Resume or letter, in duplicate describing qualifications: RVB #64, Room 501, One Main Street, Brooklyn, NY 11201.

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Consult with domestic and international clients. Design, develop and maintain proprietary interactive seismic interpretation system using mainframe computer and high speed roster graphics system. Coordinate with research division. Train clients in use of proprietary software. Supervise and train junior computer programmers. Need Master's degree or equiv. in Geophysics. Need 3 yrs. exp. as Geophysical Computer Systems Analyst or 4 yrs. exp. as Seismologist with use of Mainframe Computers. 40 hrs/wk. $3,700 per month. Apply at Texas Employment Commission, Houston, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin Texas 78778, J.O. #4793626. Ad paid by Equal Employment Opportunity Employer.

Programmer/Analyst - Responsible for analyzing, designing, implementing IDMS Database: set up data models; performance tuning, security and standards using COBOL, MVS, TSO, CMS software on IBM 4341, 370 Series. 3 years experience doing above. 40 hours per week. $38,400 per year. Job location: NYC. Send resume in duplicate to: RVB #80, Room 501, 1 Main St. Brooklyn, NY 11201.

SOFTWARE ENGINEER

Design and develop advanced object-oriented CAD software for various micro computers. Minimum requirement: MSCS or equivalent CS. Applicants must have background in object-oriented software research and design. Knowledge of Macintosh toolbox, 68000 Assembly language, MPW, MacApp, C and object-oriented languages. Salary $32K per year. Job Site/Interview: Concord, CA. Applicants clip ad and send resume to: R&D Department, 2280 Bates Ave., Suite A, Concord, CA 94520.

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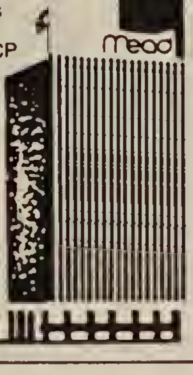

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JOB DUTIES: Take a leading role in conducting research in the area of video signal and image processing techniques to improve the performance of various instruments built by the television products division Develop algorithms and write computer software for image/data compression for efficient transmission of the pictures Develop suitable hardware to demonstrate the feasibility of the algorithms developed Write reports and give presentations to the business groups to explain various algorithms developed. Function as a consultant to the product divisions in the area of image processing

REQUIREMENTS: MSEE with two graduate-level courses in signal processing and one graduate-level course in image processing Two years of industrial research experience in successful development and completion of image and signal processing algorithms, including six months experience using motion detection and compensation algorithms Ability to communicate technical information verbally and in writing as demonstrated by one national or international conference presentation in signal and image processing field Two years experience in writing software in "C" language in UNIX environment, and six months experience in writing programs for general purpose and digital signal processing microprocessors Experience may be gained concurrently

Day shift. 8 A.M.-5 P.M., 40 hours per week. The salary range is $37,000 through $44,839 based on qualifications Benefits include educational support, insurance and profit sharing programs

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ACP/TPF
PROGRAMMER
ANALYST

Will upgrade and enhance ACP travel reservations/flight policy program to more efficient TPF software Will analyze, manipulate and expand TPR/TPF database for faster access. All to be conducted in an ACP/TPF programming environment

Applicant must possess bachelors degree or equivalent with major field of study in computer science, math or engineering plus 2 years experience in airline control environment programming. Education and experience will be found acceptable if applicant has combination of professional development courses and work experience found to be equivalent to BS degree in computer science in addition to 2 years ACP/TPF airline controlled environment programming

Salary $625/week for 40 hour work week. Additional salary may be offered if applicant possesses additional education and/or experience up to $18/hr. Apply at the Texas Employment Commission, Dallas, Texas J.O #4422568 Ad paid by an equal employment opportunity employer

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Applicants should be degreed with 10 years of data processing experience and at least 5 years as supervisor/manager of technical personnel The person should possess strong interpersonal, communication and organizational skills, be results oriented, highly motivated and a self starter Well-developed negotiation skills as well as staff development and financial responsibility are necessary We seek a strong leader who inspires confidence

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Software Engineer: Develop new products in data communications and provide support for existing products, specific utilities and TCP/IP. Entry level. Knowledge of data communications, communications utilities. Able to program in C and knowledge of *UNIX® MSCS required. Send resumes to Pyramid Technology, 1295 Charleston Rd., Mountain View, CA 94039-7295. Clip ad and send resume to above address. Code: JY/CW. *UNIX® is a registered trademark at AT&T Bell Laboratories.

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Job responsibilities: The design, development, documentation, implementation, and maintenance of applications software including database systems. Minimum qualifications: B.S. degree in Computer Science or equivalent. Experience with software development on microcomputers as well as a working knowledge of the programming languages of BASIC, FORTRAN, and COBOL. Experience with Data General minicomputers running AOS/VS and Sperry 1100 systems using DMS 1100. Salary is $25,000/year. Send resumes to: Mississippi State Employment Service, 102 Felix Long Dr., Starkville, MS 39759-2944, Job Order #MS2350906.

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Staff Director
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Roger Fraumann is Staff Director for Lachman Associates, Inc. (LAI) of Westmont, Illinois. It is one of the largest privately held computer systems software consulting and development firms in the United States. And Roger is pleased to report that plans call for continuing the 50% annual growth every year for the next five years.

Roger is also pleased with Computerworld's contributions to the company's growth. When he needs qualified people to fill positions as the company grows, he turns to Computerworld.

"*Computerworld is the only national publication that we routinely advertise in,*" says Roger. "*Last year we determined that we needed consistent national exposure. We chose Computerworld, which gave us exactly that. Simply put, Computerworld delivers just what we're looking for: top-quality job applicants.*"

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Systems Analyst to: Design systems & develop programs; improve existing prgrms/systms; define telecom/netwrking standards; design, implement, maintain all BOSS/3 Communications Monitor & point of sale to PC/minicomputer applications; maintain & enhance documentation; train department in communication/protocol lang. Min Req: M.S. Comptr Sci + academic training in cmptr networking, hardware circuitry & accounting. Sal: $27,000/yr. Resumes to: Phil Woods #7032064, Job Service North Dakota, Box 829, Fargo, ND 58107.

Systems Programmer, Associate; Develop and maintain IO interfaces and networking software for mainframes. To write software for file transfer and management at application, presentation and transport layers. System product testing and product assurance on mainframes. Bachelor's of Science degree in Computer Science plus 2 years experience or Master's of Science degree in Computer Science. Salary: $705. per/week. Place of employment, Mission Viejo. Send resume to:

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SYSTEMS ANALYST (NYC)

Systems Design, write program specifications, program and coding, testing, debugging and verification of all programs, documentation; instruct and supervise client professional computer staff. Systems implemented on large scale IBM hardware for IDMS DB/DC software, using COBOL; Bach. in Computer Science, Math. or Mechanical Engineering; 2 years experience in job offered or 2 years experience as software engineer/specialist using specified database packages; 40 hours; $44,000/year. Resumes to Nancy Goersch, Data Architects, 510 Plaza, New York, NY 10001.

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- demonstrated in-depth knowledge of at least one of the following languages: C, PASCAL, FORTRAN, MODULA II or ADA.
- demonstrated in-depth knowledge of common computer data structures (lists, trees, queues, etc.).

Additional qualifications to help identify a desirable candidate:

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- knowledge of at least one of the following programming languages: Compass, Cobol or Cybil.

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Under the supervision of the Academic Computing Coordinator this position is responsible for providing primary technical consulting for academic users, providing user seminars, developing user documentation and other user education/training materials, evaluating merits of software requests, acting as a backup to the User Liaison Section, acting as system manager for local area network, assisting efforts to assess the needs of the academic user community

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General Request for Proposal No. 1278 due 3:30 p.m., Tuesday, January 19, 1988. This is a general RFP to be used through January 1989 for the acquisition of IBM compatible mainframe system software for the State of Mississippi. Charge $10.00.

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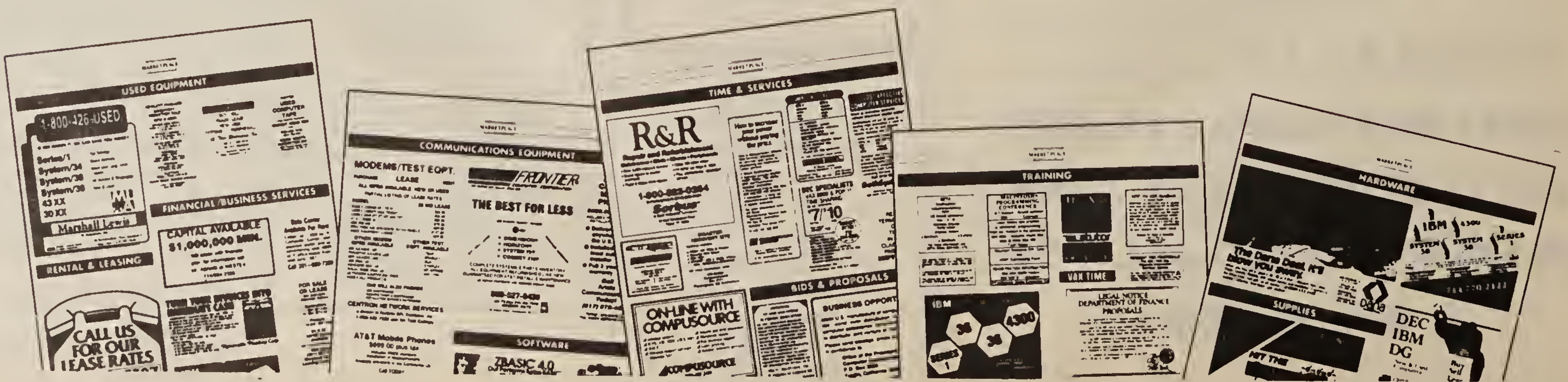

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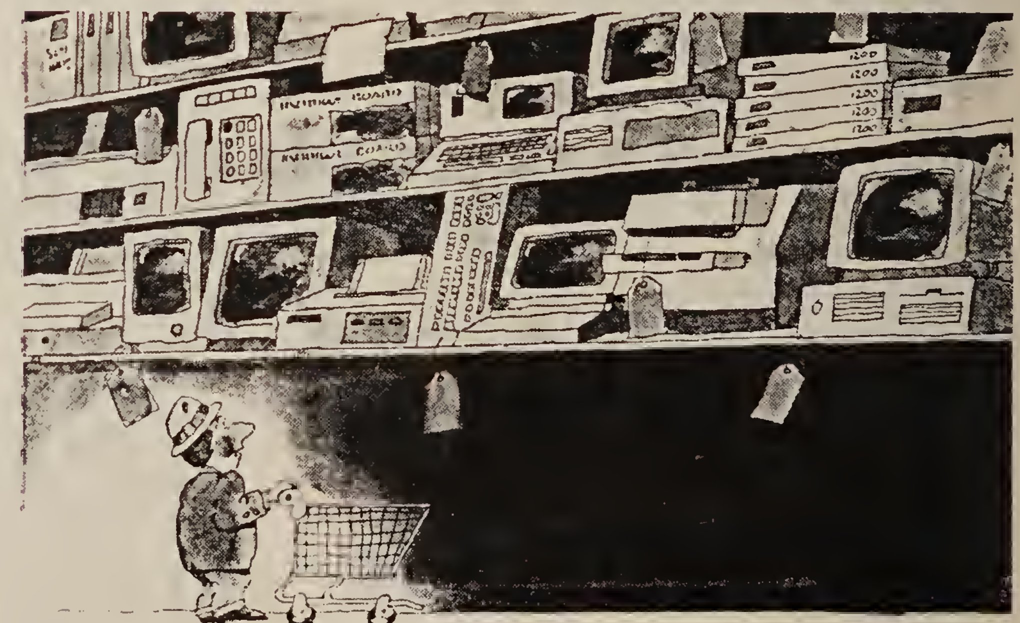

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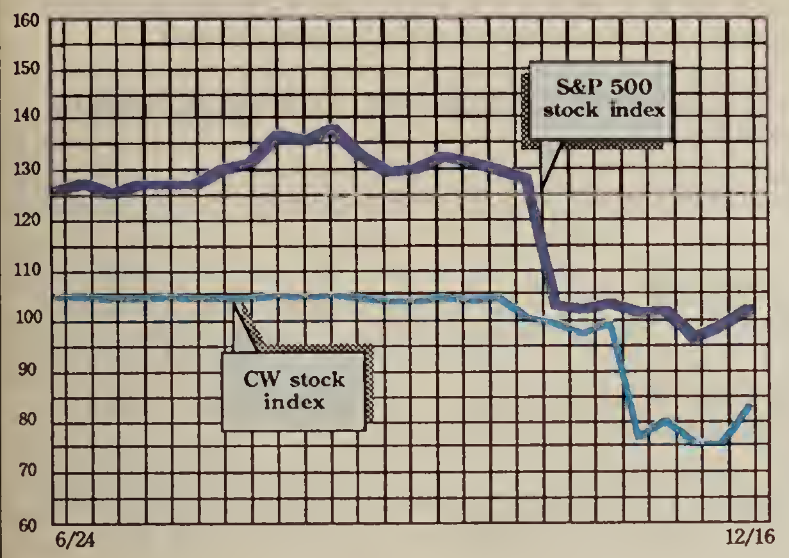

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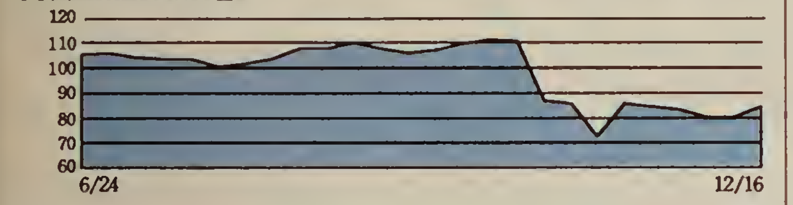

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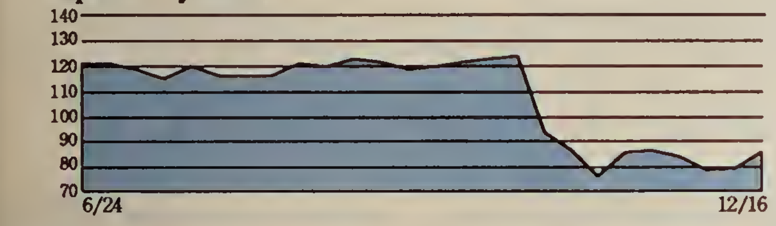

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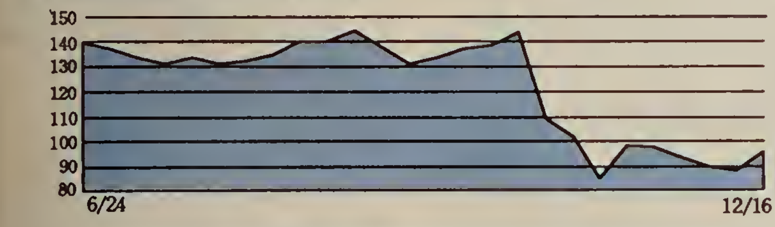

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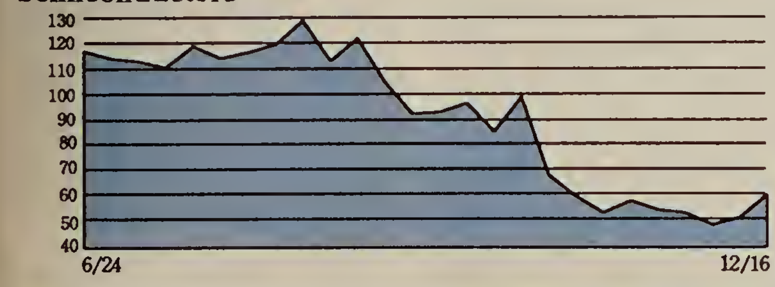

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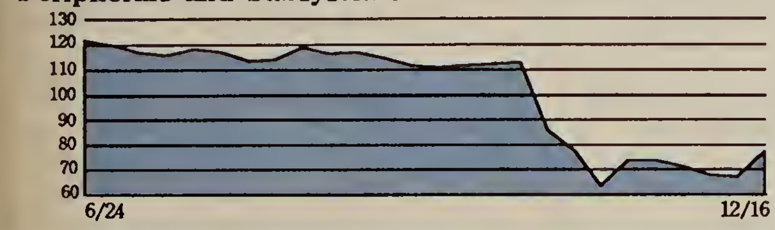

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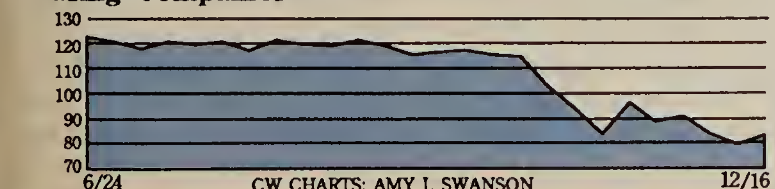

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EXCH		52-WEEK RANGE (1)		PRICE CLOSE DEC. 16 1987	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMERICAN INFO TECHS CORP	100	74	89.50	4.63	5
Q	ANDREW CORP	19	11	12.25	0.75	7
Q	ARTEL COMM CORP	5	2	1.88	0.00	0
N	AT&T	36	20	28.88	0.38	1
Q	AVANT GARDE COMP INC	6	2	2.13	0.00	0
Q	AVANTEK INC	19	7	7.50	-0.38	-5
N	AYDIN CORP	38	16	19.50	0.38	2
N	BELL ATLANTIC CORP	80	61	69.38	4.00	6
N	BELLSOUTH CORP	44	29	37.88	1.75	5
Q	FIBRONICS INT	28	12	18.75	3.75	25
Q	COMPRESSION LABS INC	8	2	3.25	0.75	30
O	COMPUTER NETWORK TECH	6	2	2.19	-0.19	-8
O	CONTEL CORP	40	25	29.38	1.00	4
Q	DATA SWITCH CORP	9	4	5.75	1.50	35
Q	DIGITAL COMM ASSOC	49	20	26.50	2.25	9
Q	DYNATECH CORP	44	14	18.25	0.00	0
Q	GANDALF TECHNOLOGIES	11	5	6.13	0.13	2
Q	GENERAL DATACOMM INDS	14	3	4.63	0.00	0
N	GTE CORP	45	29	37.00	0.38	1
Q	INFOTRON SYS CORP	12	5	5.25	-0.50	-9
N	ITT CORP	66	42	47.00	1.13	2
N	M A COM INC	16	7	9.25	0.88	10
Q	MCI COMMUNICATIONS CORP	12	5	9.63	0.25	3
Q	MICOM SYS INC	18	7	8.00	1.00	14
Q	NETWORK SYS CORP	19	7	8.75	1.13	15
N	NORTHERN TELECOM LTD	24	14	18.50	1.63	10
Q	NOVELL INC	30	12	25.13	3.25	15
N	NYNEX CORP	78	58	67.00	3.13	5
N	PACIFIC TELESIS GROUP	34	9	28.50	1.50	6
N	PARADYNE CORP	9	4	4.13	0.38	10
A	PENRIL CORP	6	1	2.50	0.13	5
N	PLESSEY PLC	41	23	28.63	3.88	16
N	SCIENTIFIC ATLANTA INC	20	8	11.25	1.13	11
N	SOUTHWESTERN BELL CORP	46	22	35.13	1.38	4
Q	3 COM CORP	26	12	20.38	3.25	19
N	TIMEPLEX INC	41	17	32.75	3.25	11
Q	UNGERMANN BASS INC	16	5	7.50	1.88	33
N	U S WEST INC	60	43	51.50	1.88	4

Computer Systems

EXCH		52-WEEK RANGE (1)		PRICE CLOSE DEC. 16 1987	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ALLIANT COMPUTER SYS	37	5	6.75	0.75	13
Q	ALPHA MICROSYSTEMS	6	3	3.25	0.25	8
Q	ALTOS COMPUTER SYS	17	9	9.63	0.63	7
A	AMDAHL CORP	50	19	33.63	3.13	10
Q	APOLLO COMPUTER INC	25	9	12.75	1.25	11
Q	APPLE COMPUTER INC	60	20	39.25	4.25	12
N	BOLT BERANEK & NEWMAN	30	12	15.00	1.38	10
Q	BRITTON LEE INC	5	1	1.63	0.25	18
N	COMPAQ COMPUTER CORP	79	19	54.25	7.00	15
Q	COMPUTER AUTOMATION INC	17	3	7.25	1.00	16
A	COMPUTER CONSOLES INC	12	2	3.38	0.00	0
Q	CONCURRENT COMP CORP	24	11	16.25	0.75	5
N	CONTROL DATA CORP DEL	38	18	21.63	2.13	11
Q	CONVERGENT TECH	12	3	4.00	0.50	14
Q	CONVEX COMPUTER CORP	22	6	7.63	0.63	9
N	CRAY RESH INC	136	47	75.25	8.25	12
Q	DAISY SYS CORP	13	5	6.50	0.50	8
N	DATA GEN CORP	39	16	24.25	3.38	16
N	DATAPOINT CORP	9	3	4.63	0.00	0
N	DIGITAL EQUIP CORP	200	105	135.25	9.88	8
N	FLOATING POINT SYS INC	17	3	3.38	0.25	8
N	GOULD INC	34	8	11.38	0.88	8
N	HARRIS CORP	43	22	26.38	1.50	6
N	HEWLETT PACKARD CO	74	36	57.25	4.50	9
N	HONEYWELL INC	91	49	58.50	5.50	10
N	IBM	176	102	118.88	4.88	4
Q	INFORMATION INTL INC	17	9	10.25	0.38	4
Q	IPL SYS INC	3	2	2.00	0.13	7
Q	MASS COMPUTER CORP	14	5	5.25	0.25	5
N	MATSUSHITA ELEC INDL LTD	196	93	162.25	-0.25	0
Q	MEGADATA CORP	7	3	2.88	0.00	0
Q	MENTOR GRAPHICS CORP	39	14	22.63	3.88	21
N	NBI INC	14	4	4.25	0.13	3
N	NCR CORP	87	44	62.25	2.00	3
N	PRIME COMPUTER INC	31	12	15.25	1.38	10
Q	PYRAMID TECHNOLOGY	12	5	7.25	1.00	16
Q	STRATUS COMPUTER	41	15	22.88	2.25	11
Q	SUN MICROSYSTEM INC	46	14	32.50	2.75	9
Q	SYMBOLICS INC	6	1	1.75	0.56	47
N	TANDEM COMPUTERS INC	38	17	26.50	2.25	9
N	TANDY CORP	57	28	32.00	0.13	0
N	ULTIMATE CORP	37	16	21.00	3.00	17
N	UNISYS CORP	48	24	33.75	2.75	9
A	WANG LABS INC	19	10	11.25	0.88	8

Software & DP Services

EXCH		52-WEEK RANGE (1)		PRICE CLOSE DEC. 16 1987	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ADVANCED COMP TECH	6	1	1.88	-2.25	-55
N	ADVANCED SYS INC	35	17	28.50	2.00	8
N	AGS COMPUTERS INC	30	11	15.50	2.13	16
Q	AMERICAN MGMT SYS INC	20	9	13.75	3.88	39
Q	AMERICAN SOFTWARE INC	22	6	8.25	0.75	10
N	ANACOMP INC	11	4	6.13	0.63	11
Q	ANALYSTS INTL CORP	10	4	6.50	0.25	4
Q	ASHTON TATE	33	13	21.25	3.25	18
Q	ASK COMPUTER SYS INC	17	6	8.25	1.38	20
Q	AUTODESK INC	34	12	21.75	0.50	2
N	AUTO DATA PROCESSING	55	16	44.75	2.13	5
Q	BOOLE & BABBAGE INC	12	5	6.50	-0.25	-4
N	COMPUTER ASSOC INTL INC	37	13	30.13	3.75	14
Q	COMPUTER HORIZONS CORP	15	7	8.38	1.25	18
N	COMPUTER SCIENCES CORP	73	42	54.25	5.75	12
N	COMPUTER TASK GROUP INC	18	9	10.13	0.38	4
Q	COMSHARE INC	28	12	12.75	-0.25	-2
N	CULLINET SOFTWARE INC	14	4	5.88	1.13	24
Q	CYCARE SYS INC	10	6	6.13	0.13	2
Q	DUQUESNE SYS INC	33	10	18.25	2.25	14
A	DATA ARCHITECTS INC	17	7	8.63	1.13	15
N	GENERAL MTRS (CLS E)	51	24	34.50	1.63	5
Q	HOGAN SYS INC	17	5	5.50	0.38	7
Q	INFORMIX CORP	31	10	20.50	2.75	15
Q	INTELLICORP INC	11	3	3.00	-0.25	-8
Q	KEANE INC	10	5	6.50	0.25	4
Q	LOTUS DEV CORP	40	16	29.75	3.25	12
Q	MANAGEMENT SCI AMER	21	6	6.38	0.00	0
Q	MICRO PRO INTL CORP	8	2	3.94	0.63	19
Q	MICROSOFT CORP	79	23	54.25	8.00	17
Q	NATIONAL DATA CORP	34	19	26.00	3.00	13
Q	ON LINE SOFTWARE INTL INC	22	9	10.50	0.63	6
Q	ORACLE SYS CORP	38	9	29.25	4.50	18
N	PANSOPHIC SYS INC	28	11	16.00	2.88	22
Q	POLICY MGMT SYS CORP	30	15	19.75	2.25	13
Q	PROGRAMMING & SYS INC	14	7	8.00	0.75	10
Q	REYNOLDS & REYNOLDS CO	39	14	14.50	0.75	5
Q	SEI CORP	18	9	15.00	0.25	2
Q	SHARED MED SYS CORP	53	19	22.00	2.13	11
Q	SOFTWARE AG SYSTEMS INC	19	9	9.25	0.00	0
Q	SOFTWARE PUBG CORP	17	5	7.75	0.88	13
A	STERLING SOFTWARE INC	14	6	7.13	-0.13	-2
Q	SUNGARD DATA SYS INC	21	10	12.50	2.50	25
Q	SYSTEMATICS INC	30	17	25.50	3.00	13
N	SYS. SOFT INC.	24	7	12	3.00	33
N	URS CORP	23	11	11.00	0.00	0
Q	VM SOFTWARE INC	45	7	8.00	1.00	14

Semiconductors

EXCH		52-WEEK RANGE (1)		PRICE CLOSE DEC. 16 1987	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADV MICRO DEVICES INC	25	8	10.38	1.25	14
N	ANALOG DEVICES INC	24	8	11.38	1.13	11
Q	ANALOGIC CORP	13	5	6.13	-0.25	-4
Q	INTEL CORP	42	14	26.00	0.50	2
Q	LSI LOGIC CORP	17	7	9.50	1.75	23
N	MOTOROLA INC	74	35	49.63	3.25	7
N	NATL SEMICONDUCTOR	22	10	13.63	1.25	10
N	TEXAS INSTRS INC	80	36	49.25	3.25	7
A	WESTERN DIGITAL CORP	33	12	16.50	3.38	26

Peripherals

EXCH		52-WEEK RANGE (1)		PRICE CLOSE DEC. 16 1987	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ALLOY COMP.	12.75	4.5	5.25	0.00	0
N	AM INTL INC	9	3	4.50	-0.13	-3
Q	AST RESH INC	23	6	7.50	0.75	11
Q	AUTO TROL TECH CORP	9	3	3.75	0.00	0
Q	BANCTEC INC	16	5	7.13	1.25	21
Q	CIPHER DATA PRODS INC	18	4	6.00	0.00	0
A	COGNITRONICS CORP	5	2	2.38	0.00	0
N	COMPUGRAPHIC CORP	28	19	21.13	1.88	10
N	COMPUTERVISION CORP	23	7	8.63	0.88	11
A	DATAPRODUCTS CORP	24	7	8.75	0.63	8
A	DATARAM CORP	9	5	5.88	0.25	4
N	DECISION INDS CORP	13	4	9.88	0.63	7
N	EASTMAN KODAK CO	71	42	50.75	2.88	6
Q	E M C CORP MASS	29	10	16.00	3.00	23
Q	EMULEX CORP	10	4	5.38	0.63	13
Q	EVANS & SUTHERLAND	40	18	22.50	4.25	23
Q	ICOT CORP	13	3	4.00	0.75	23
Q	INTERLEAF INC	24	9	16.88	2.75	19
Q	IOMEGA CORP	8	1	1.50	0.25	20
Q	LEE DATA CORP	10	3	2.88	0.25	10
Q	MASSTOR SYS CORP	6	1	2.38	0.69	41
Q	MAXTOR CORP	34	6	10.63	2.25	27
Q	MICROPOLIS CORP	44	13	23.50	4.50	24
Q	MINISCRIBE CORP	18	5	8.88	2.50	39
N	MINNESOTA MNG & MFG CO	84	45	64.38	4.00	7
A	MSI DATA CORP	24	11	17.63	3.63	26
Q	PRIAM CORP	6	1	1.75	0.38	27
Q	PRINTRONIX INC	13	7	7.00	0.13	2
N	QMS INC	27	11	14.00	1.38	11
Q	QUANTUM CORP	35	8	11.63	2.38	26
Q	RAMTEK CORP	6	2	3.25	0.13	4
N	RECOGNITION EQUIP INC	27	7	10.25	2.38	30
Q	REXON INC	14	5	5.25	0.38	8
Q	SCAN TRON CORP	17	7	10.75	2.00	23
Q	SEAGATE TECHNOLOGY	46	10	16.50	2.63	19
N	STORAGE TECH CORP	5	1	1.25	0.00	0
Q	TANDON CORP	7	2	1.94	0.31	19
A	TEC INC	7	3	3.63	-0.25	-6
N	TEKTRONIX INC	43	21	25.25	3.00	13
Q	TELEVIDEO SYS INC	3	1	1.38	0.25	22
N	TELEX CORP	102	30	55.38	2.88	5
Q	WYSE TECH	40	11	21.13	3.50	20
N	XEROX CORP	85	50	58.88	4.75	9
Q	XIDEX CORP	16	6	7.13	1.00	16

Leasing Companies

EXCH		52-WEEK RANGE (1)		PRICE CLOSE DEC. 16 1987	WEEK NET CHNGE	WEEK PCT CHNGE
Q	CAPITAL ASSOCIATES INTERNATIONAL INC	11	4	4.00	0.25	7
N	COMDISCO INC	37	12	17.00	0.00	0
N	CONTINENTAL INFO SYS	14	5	6.25	1.13	22
Q	PHOENIX AMERN INC	8	2	2.50	-0.25	-9
Q	SELECTERM INC	6	3	3.00	0.00	0

EXCH: N = NEW YORK; A = AMERICAN; Q = NATIONAL;
O = OVER-THE-COUNTER; S = SPLIT

O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Sugarplums

Market gains turn to coal, but tech leaves goodies under tree

Although last week's wave of stock market optimism receded Thursday with a 50-point drop in the Dow Jones industrial average, most computer stocks were still riding high on earlier gains.

Large-systems manufacturers particularly benefited from the week's bull market. Digital Equipment Corp. notched a four-day surge of 13⅛ points, carrying it to 133⅝. IBM was up 5⅜ points to 115½, and Unisys Corp. picked up 3¼ points to bring it to 33¾.

Among other high-tech blue chips, Hewlett-Packard Co. gained 3⅝ points to 55½, Cray Research, Inc. rose 5⅝ points to 72, Compaq Computer Corp. was up 6 points to 52¼, and Computer Associates International, Inc. rose nearly 20%, gaining 5 points to close at 30½. Other strong performances came from Amdahl Corp., up 4⅞ points to 34¼; Apple Computer, Inc., up 5¼ points to 39¼; and Microsoft Corp., up 4 points to 52.

Telex Corp. closed Thursday at 55, up 2¼ points in four days. The terminals vendor had jumped 3¼ points to 56 on Tuesday after it agreed to accept a friendly takeover bid from Memorex International N.V. for the equivalent of $62 per share.

CLINTON WILDER

The fantabulous wicked cool won't-this-be-fun year-end quiz

Jaded by *Jeopardy?* Sharpen your pencil, and give yourself a mental stocking stuffer by testing your comprehension of the major events of 1987, as reported by *Computerworld.* Score 4.5 points for each correct answer; see how you stack up in the world of MIS gurus with the following ratings system:

- 90-100: You're on top of the industry, poised for a career as chief information officer, an often-quoted "industry observer" or risk arbitrageur.
- 80-89: You may be trailing the leading edge by a tad, but you're still one step ahead of your IBM sales representative.
- 70-79: You could upgrade to a brain with a few more million instructions per second, but your current model should get you through next year's processing work load.
- 60-69: Your backlog is mounting; a little recompiling should help.
- Less than 60: Wanna buy some nice Honeywell Multics applications cheap?

Answers can be found on page 77. Here we go:

1. Who made more than the president of IBM in 1977 by lecturing and writing while on sabbatical from that very company?

2. What is the biggest reason MBA students are shunning MIS as a discipline, according to a two-part *Computerworld* report in June?

3. What three companies did 3Com Corp. seek to merge with or acquire before it successfully merged with Bridge Communications, Inc.?

4. What fourth-generation language and data base management system product line was taken over by a French defense electronics conglomerate nine months after the conglomerate unsuccessfully attempted to acquire another fourth-generation language and DBMS product line?

5. What product — which debuted this year at an Indian restaurant in New York — combines aspects of computer-aided software engineering, or CASE, technology with tools to develop IBM DB2 applications?

6. How many Personal System/2s did IBM claim to have shipped as of November?
(A) 100,000 (B) 500,000 (C) One million (D) None

7. What is the name of Compaq Computer Corp.'s latest series of systems to rival IBM's PS/2s?
(A) Deskpro 386/20 (B) Deskpro 386 (C) Deskpro 386 Plus (D) Big Copycat

8. When is IBM's OS/2 Extended Edition 1.1 expected?
(A) July 1988 (B) August 1989 (C) November 1988 (D) 12th of Never

9. Name a communications industry standard that has received little commercial product support from vendors, despite voluminous verbal support this year.

10. In what quarter of 1988 is the IBM 3990 controller, which was announced in the fall, expected to be available?

11. What is the widely used code name for IBM's follow-on to its System/36 and 38?

12. Which two of these IBM product families were not the subject of new model introductions in 1987: 3090, 4381, 9370, System/36, System/38, System/88?

13. How many CPUs are expected to be tightly grouped when Digital Equipment Corp. introduces its new high-end system in early 1988?

14. IBM released an operating system this year that will bring interactive, end-user computing to the biggest mainframe shops running 3090s. What is it?

15. Which Japanese company received the key to the kingdom that American software companies wanted, and what is the key?

16. Sun Microsystems, Inc. broke away from the Motorola, Inc. 68000 architecture this year when it introduced its high-end Sun-4 family of workstations. On what processor is the Sun-4 based?

17. With its acquisition of Uccel Corp., Computer Associates International, Inc. gained entry into a volatile vertical market. Which one?

18. How many versions of Lotus Development Corp.'s 1-2-3 are currently shipping or under development?
A) Two B) Three C) Five D) Seven

19. About 15,000 people attended the National Computer Conference in June last year. How many attended the biggest NCC, which was in 1983?
(A) 65,000 (B) 73,000 (C) 87,000 (D) 97,000

20. The independent computer leasing industry's second and third largest players combined in 1987. What were the companies, and who acquired whom?

21. What major computer systems vendor was found to have shipped its products to South Africa in 1986, despite its own corporate policy against the practice?

22. What Connecticut systems vendor locked its doors and disappeared?

Cobol test

CONTINUED FROM PAGE 1

which the bureau has supervised the testing. However, Micro Focus, Inc. acknowledged last week that earlier this year, it had requested nondisclosure for testing of a PC Cobol 85 compiler it was developing for IBM.

Bureau officials said the written procedures that allowed IBM to avoid appearing on the list of vendors slated to be tested are "confusing" and will be rewritten next month. The rewrite will make it clear that a vendor does not have to appear on any published list until certification is ready to be announced, if it chooses that alternative.

Other compiler producers contacted said they were surprised such an option existed.

The compiler issue surfaced when *Computerworld* asked NBS officials why IBM did not appear on an Oct. 1 list of vendors certified as having Cobol 85 compilers or were scheduled to be tested during the next 12 months. The federal government has advised its agencies to require Cobol 85 in any software contracts, and IBM acknowledged, at the time, it was continuing to bid on government business that included Cobol.

Cobol that meets the American National Standards Institute's (ANSI) standard for Cobol 85 is not in widespread use, but it is believed to offer programming and maintenance gains of which the federal government wants to take advantage.

Compiler list incomplete

The NBS publishes a Certified Compiler List that advises federal agencies which vendors meet ANSI standards. The NBS said in follow-up discussions about the private IBM compiler test that the published list should not be read as all-inclusive, although it appears to be.

Section 8, page 102, of the Certified Compiler List states that the list contains the schedule for language compiler tests. It continues, "All processors [compilers] are identified by name of vendor," compiler name, level of validation and scheduled test month.

"We feel that is misleading. It could lead to misunderstanding of our treatment of IBM. The list may not be a complete list," said Mabel V. Vickers, NBS programming language adviser.

Helen Wood, deputy director of the Institute of Computer Sciences and Technology within the NBS, which conducts the tests, said regulations governing the tests are "vaguely written" and "confusing." They appear to set up a public process but actually create a broad allowance to keep a test behind closed doors until it is completed and results are ready to be announced, she said.

When asked why other vendors had not discovered that option, Wood said, "Maybe they don't have so many lawyers."

The clarifying comments from the officials at the NBS were solicited after IBM officials claimed that IBM had been unfairly singled out in a Nov. 30 *Computerworld* story on the undisclosed compiler test.

"I've got some people in the Information Systems Group that are pretty unhappy that it looks like we're getting special treatment. Other vendors have requested tests in private. It's a normal procedure," said IBM spokesman John H. Mihalec.

Wood said she agreed that other vendors were given the option of keeping a scheduled test out of the public eye during the 1980 to 1985 period, when the testing was administered by the General Services Administration. She did not name any other vendors that had used such an approach and said that she knew of no records that indicated how frequently vendors invoked the option.

Mihalec cited IBM's legal requirement to avoid preannouncing a product as the reason it wished to keep its compiler from appearing on the NBS test list.

IBM's MVS/XA operating system customers are believed to be waiting for IBM to get its VS Cobol II compiler certified as an ANSI-standard Cobol 85 compiler. The VS Cobol II compiler allows them to recompile a Cobol program for 31-bit operation under MVS/XA, or above the 16M-byte virtual memory line that restricts 24-bit programs under IBM's MVS/SP.

Clean up in private

NBS officials said the main reason they permit testing in private is to avoid embarrassing vendors.

Tandem Computers, Inc., failed the validation test three times in public before getting its Cobol compiler certified, the first one certified at a high level, according to Tandem spokesman Don Nelson.

The following passage in the Institute of Computer Sciences and Technology Test Procedures document given to compiler producers presents the option of keeping a test out of the public eye, according to institute officials:

"With the exception of information obtained through special Institute of Computer Sciences and Technology requests for advance information for scheduling purposes, all information provided about the specifics of a validation are public information available to the public upon request after the completion of the on-site data collection phase of the validation."

"We're a little confused about what that means," Vickers said. The paragraph is believed to indicate that a test becomes public information only after it is completed and results are available, she said. Vendor wishes may dominate the procedure until it reaches that stage, she added.

The compiler tested for IBM is believed to be a Cobol 85 version of its VS Cobol II compiler. While it is still unannounced, Mihalec said, the compiler has been listed since September in an internal data base for IBM branch offices "as being available to meet specific customer needs."

Smoking Xmas PC sales take chill out of winter

BY ALAN J. RYAN
CW STAFF

Unlike hula hoops, CB radios and Trivial Pursuit games, computers are still on a lot of wish lists this holiday season.

Retailers say sales of both home and business computers are brisk, as parents buy their kids low-cost home computers while their bosses spend their excess personal computer budgets. And in contrast to the Cabbage Patch dolls of two years ago, a computer can usually be bought off the shelf.

Dick Danstrom, president of four Computerland Corp. stores in the Chicago area, said his year-end sales are up, even though his stores are not generally geared toward attracting home users. "This has never been a big Christmas store," he said. "Our biggest months are December, January and February, which has more to do with the end of the calendar year than with Christmas."

Use it or lose it

"There are a lot of companies that need to spend money before their budgets run out at the end of the year," said Chuck Boyle, president of Computerease Business Systems in Milford, Conn. Big sellers this year are laser printers, IBM Personal System/2s and Apple Computer, Inc. Macintosh SEs, he said.

Ira Lubert, president of IBM and Compaq Computer Corp. dealer Compucom Systems in Cherry Hill, N.J., concurs. "We have some companies that are buying inventory that they would normally buy next year because they have excess funding," Lubert said. "Orders are up."

He said hot business items this season are Compaq's 386 computer and IBM's PS/2 line. "The [PS/2 Model] 30s and 50s are very popular," he added.

Tom Jacobs, chairman of the board of Computer Town, Inc., a four-store chain based in Nashua, N.H., said the PS/2 Models 30 and 50 are still hits with business buyers but that he has had problems getting a steady supply of them from IBM.

Luckily, Jacobs said, sales of PS/2 Model 25s are so high that they are making up for the lack of Model 30s. The Model 25, geared toward home users and small businesses, has been his best seller. The dealer said the Model 25s are to Christmas sales this season what Apple computers traditionally have been.

Jacobs commented that he suspects that his Apple sales are down because of Apple's program offering teachers the units at below-dealer prices.

Jim Madigan, owner and manager of two Softwaire Centre International stores in Ohio, said he has noticed a decrease in the number of home users in his store and an increase in business users, leaving his shelves overstocked with home products and understocked for business goods.

"The sale of our hard-drive and Intel 80386-based systems is very strong," Madigan said, "but sales of our bread-and-butter dual-floppy home computers with a color monitor and an inexpensive printer are lacking this year."

Cupboards aren't bare

Typical of the December-to-February time periods are supply problems from vendors, but, suprisingly, dealers reported few problems last week.

Leading Edge Products, Inc., notorious for past shipping woes, has met all of Computer Town's weekly orders this season, Jacobs said.

Madigan of Softwaire Centre said he has not been as lucky. The demand for Leading Edge computers in his store has remained high, but the shipping time is still lengthy. "We have a 60-day delivery time on the Model D2s," he said.

And while Apple has had few supply problems, two dealers said the Macintosh SE hard disk model has been hard to get. "It seems like they're filling all their direct sales first to large corporate employees and teachers," said Boyle of Computerease.

DEC preps ANSI Cobol version

MAYNARD, Mass. — Digital Equipment Corp. said last week it will deliver in January a version of Cobol for the VAX that meets the ANSI standard for Cobol 85.

Version 4.0 of the existing VAX Cobol was validated in September by the National Bureau of Standards as a high-level Cobol compiler.

Users of VAX Cobol are already experienced with such Cobol 85 features as contained programs, scope terminators and the EVALUATE statement because they were supported in earlier releases of the language, said Augustus H. Rice, VAX Cobol project leader.

Additional features include NOT conditionals, a REPLACE statement and a CLASS clause.

Version 4.0 also includes an optional compile-time qualifier that retains the previous version's compile results to illustrate the incompatible differences between Cobol 85 and earlier versions. VAX Cobol runs on Vaxstations, Microvaxes and VAX minicomputers and ranges in price from $1,200 on the Vaxstation to $28,690 on the VAX 8800.

QUIZ ANSWERS

1. James Martin [CW, Nov. 9].
2. To go to Wall Street for the lure of big money in investment banking [CW, June 15].
3. Sytek, Inc.; Convergent Technologies, Inc.; and Centram Systems West, Inc. [CW, Aug. 3].
4. Nomad, acquired by Thomson SA from D&B Computing Services [CW, July 13].
5. Casepac, a product developed by Tata Consultancy Services in Bombay (which also owned the Indian restaurant) and marketed by On-Line Software International, Inc. [CW, Aug. 24].
6. One million [CW, Nov. 9].
7. Deskpro 386/20 [CW, Oct. 5].
8. November 1988 [CW, Nov. 9].
9. Integrated Services Digital Network, or ISDN [CW, Oct. 12].
10. Third [CW, Sept. 7].
11. Silverlake [CW, Sept. 7].
12. System/38 and 9370.
13. Four [CW, Nov. 2].
14. VM/XA SP Release 1 [CW, June 15].
15. Arbitrators awarded Fujitsu Ltd. access to IBM's systems software source code [CW, Sept. 21].
16. Sun's proprietary reduced instruction set computer-based microprocessor, based on technology called Scalable Processor Architecture, or Sparc [CW, July 13].
17. Banking [CW, June 8].
18. Five: 1-2-3 Release 2.01; 1-2-3 Release 3; 1-2-3 for the Mac; 1-2-3/G; 1-2-3/M.
19. 97,000 [CW, May 18].
20. Continental Information Systems Corp., known as CIS, acquired CMI Corp. [CW, June 1].
21. Wang Laboratories, Inc. [CW, June 8].
22. Canaan Computer Corp. [CW, Aug. 10].

Oracle

FROM PAGE 1

available until at least the third quarter. Although a price has not yet been set, Ellison said Oracle's product will be priced aggressively.

"When you are entirely within the 1-2-3 spreadsheet, you can create tables, query tables, generate reports and generate graphs," he said of the data base add-in. "You can completely manage your data base without ever leaving your 1-2-3 spreadsheet." Through a variety of communications links, the product can also access data from other computers.

This is not Oracle's first stab at the PC end-user marketplace. The firm still offers SQLcalc, a proprietary spreadsheet that connects to Oracle data bases. SQLcalc, however, has lagged far behind other microcomputer spreadsheets. "Oracle has seen the light, and rather than providing their own spreadsheet, they'll now be doing the smart thing using Lotus," said David Laub, a systems consultant with Enterprise Systems, Inc.

Laub said the Oracle strategy is sound. "It makes sense for people who are heavily invested in spreadsheets. It allows them to use data in standard spreadsheet form and the SQL format and should be a very powerful product," he commented.

Informix Software, Inc., an Oracle competitor, already markets a similar product called Datasheet Add-In. It gives 1-2-3 users an interface to an Informix relational DBMS.

Ironically, Oracle developed a product that will compete with Lotus/DBMS using Lotus's own Add-In Developer's Toolkit.

The Oracle series, including the personal computer version, has been primarily aimed at programmers who develop data base applications. Many nontechnical users simply work with a canned Oracle application for data entry or querying.

Unlike the Oracle product, which works with the current version of 1-2-3, Lotus/DBMS will only import data from the still unshipped Lotus 1-2-3 Release 3 and 1-2-3/G, Lotus said.

Oracle for 1-2-3, to be formally announced Jan. 18, uses some of Oracle's Professional Oracle technology. In order to bring a full version of Oracle to the PC, the company developed methods for breaking the 640K-byte barrier of Microsoft Corp.'s MS-DOS. Like the Oracle Database Add-In for 1-2-3, Professional Oracle sits in memory above 640K bytes, leaving lower memory free to run 1-2-3.

System requirements

As a result, both products require extended memory and an Intel Corp. 80286- or 80386-based microcomputer. Lotus/DBMS also requires an 80286 or 80386 machine, but it runs under Microsoft's OS/2, which provides a memory boost.

Oracle's product is part of the company's broad strategy to distribute data bases across multiple computers and operating systems. While Oracle currently runs on more than 30 systems, a few key elements are missing.

The firm announced a data base server called LANserver Oracle in April, but it has yet to ship the product. LANserver was originally scheduled for delivery by the end of this year and is now slated to ship next month, said Mark G. Rawlins, director of marketing communications for Oracle.

Oracle's QMX, a data base interface announced last summer, is scheduled to ship early next year. It will be available initially for IBM Personal Computers and mainframes. QMX is similar to IBM's Query Management Facility, or QMF, which provides end users with a relatively simple approach to querying data bases.

Oracle said it also plans to deliver an OS/2 version of its data base next month. The initial version, however, will not run on servers. An update designed for servers will be available by the beginning of the second quarter of next year, Rawlins said.

Senior Writer Alan J. Ryan contributed to this report.

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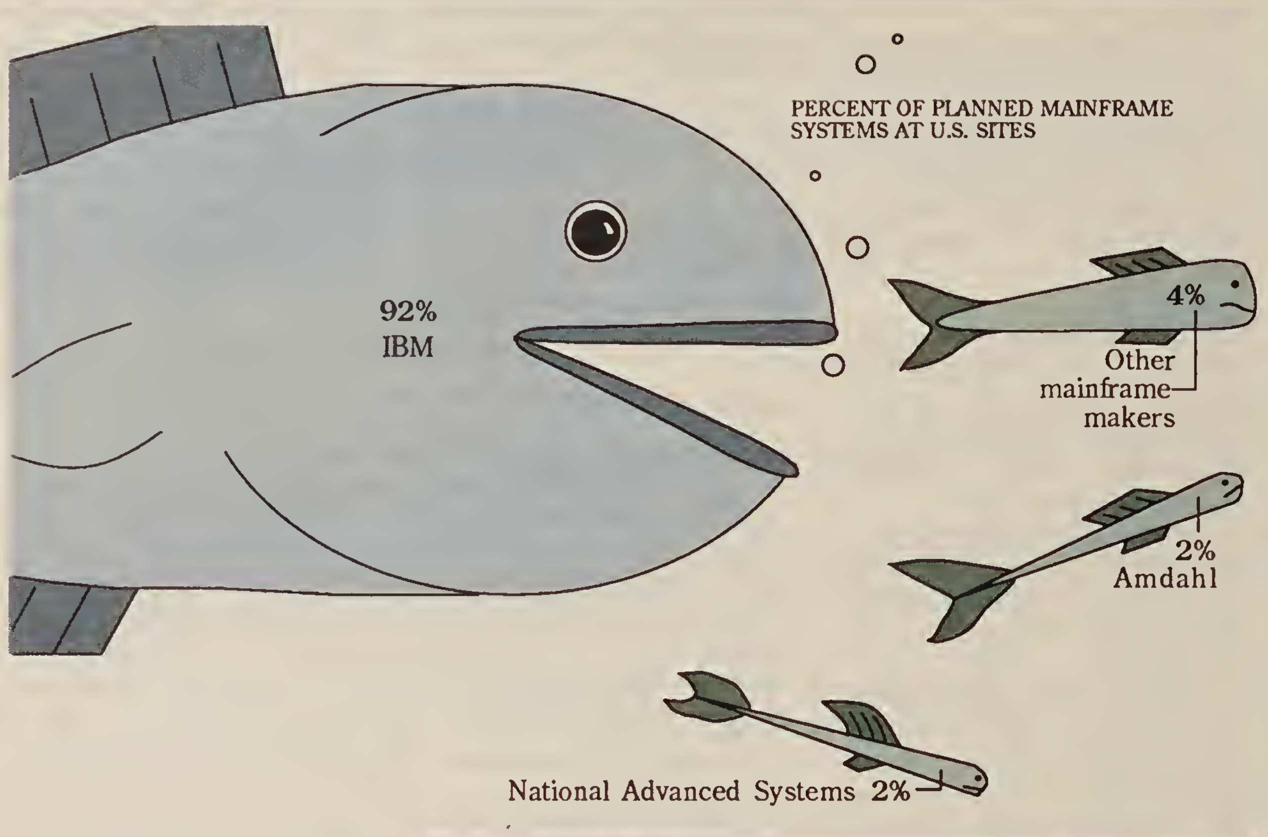
TRENDS

Mainframe market

IBM still overwhelms mainframe competitors



In the mainframe market, IBM remains the undisputed king with a 92% share, leaving mere scraps for both Amdahl Corp. and National Advanced Systems (NAS), which each hold a 2% portion.

As Big Blue continues to gobble up business, a good chunk of it could come from the manufacturing sector, which shows the greatest amount of mainframe buying intentions from a survey including 11 industry segments that was conducted by Computer Intelligence Corp. (CI) in La Jolla, Calif.

But while CI cautions that the overall market shares look discouraging for the plug-compatible vendors, they are making headway in certain segments. Both NAS and Amdahl showed 7% gains in market share for IBM 3090-class machines this year, a CI spokeswoman said.

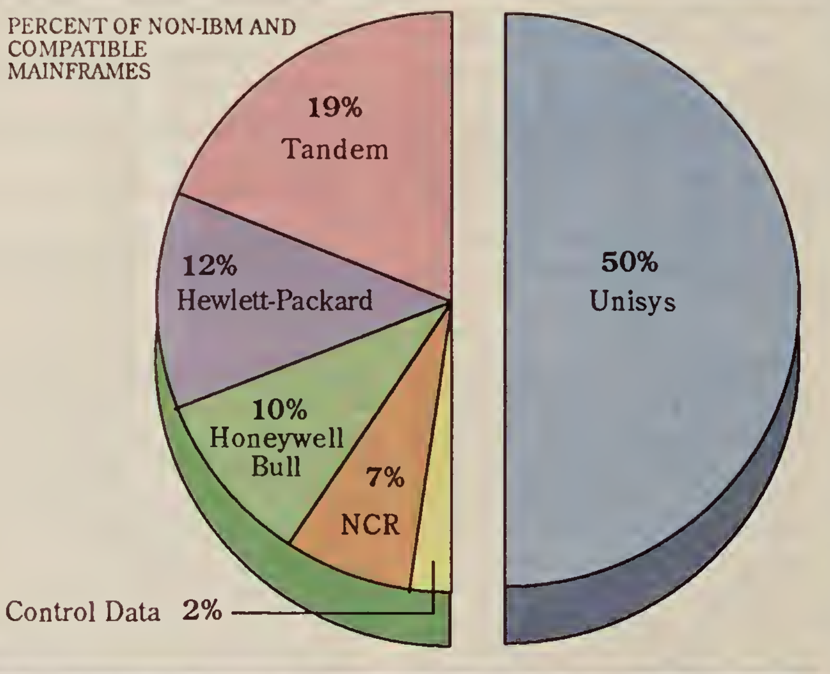
Those with mainframe buying intentions who opt for a non-IBM environment will have more options. Five major vendors are jockeying for position in the noncompatible market, although Unisys Corp. holds a clear advantage over the others with a 50% share.

Second to Unisys is Tandem Computers, Inc. with a 19% share; Hewlett-Packard Co. and Honeywell Bull, Inc. are close with 12% and 10% shares, respectively. Trailing the pack is NCR Corp. with a 7% share.

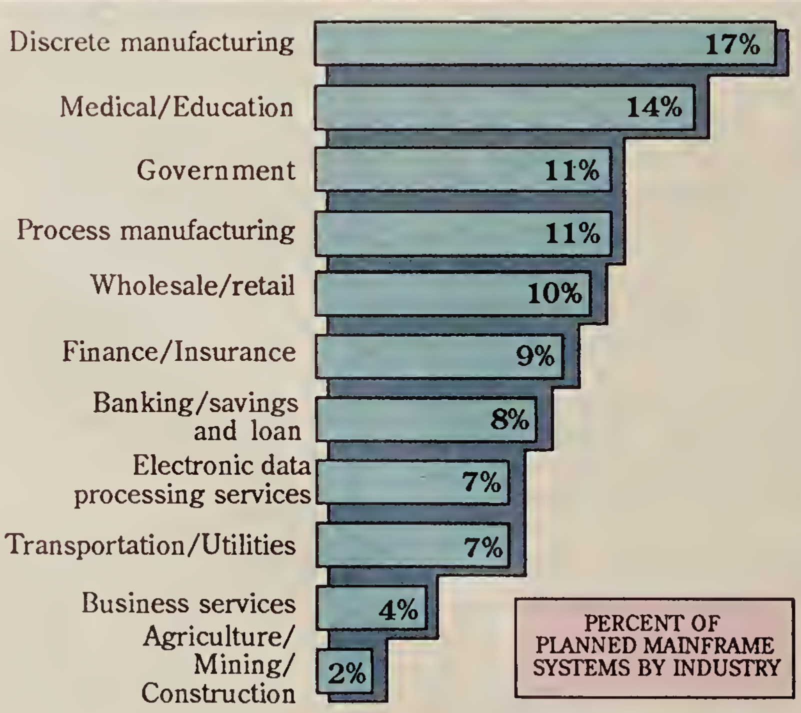
High demand for mainframes is also coming from medical and educational institutions, which account for 14% of the users who plan to buy hosts.

ROSEMARY HAMILTON

Unisys leads the pack of alternatives



Manufacturers' buying plans biggest



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INSIDE LINES

Challenged from within. Seven IBM employees, including the leaders of two organizations of black IBM employees, have submitted a shareholder resolution calling on IBM to halt all "direct or indirect" sales and services to South Africa. IBM may have sold its business in South Africa, but critics say the continuing sale of IBM products to the nation's white minority smacks of support for the apartheid system. "IBM sales support one side in the racial conflict — the minority rulers," said James Leas, an IBM electronics engineer and author of the resolution.

The story unfolds . . . According to a user in a Fortune 100 firm, IBM's Personal System/2 machines with the Micro Channel bus run OS/2 faster than non-Micro Channel machines. "With clones, you have to have an operating system-level driver to arbitrate bus contention, whereas the Micro Channel has hardware that arbitrates bus contention for you. That is the significant difference," the user said. Running benchmarks of a beta-test version of OS/2 on both PS/2s and Compaq PCs, the PS/2s triumphed, the user said. Of the seven machines tested, the 20-MHz PS/2 Model 80 was the clear winner. Although the user did not test the 20-MHz Compaq Deskpro 386, he did compare the 16-MHz PS/2 Model 80 with a 16-MHz Compaq 386. The PS/2 still won.

. . . and windows open. The Presentation Manager for OS/2 is becoming quite solid, according to one company that is porting its applications to the new operating system. IBM has said it will ship OS/2 Standard Edition with the Presentation Manager in October 1988 and Extended Edition 1.1 with the Presentation Manager in November 1988. Many developers, however, said those dates are conservative and that Big Blue plans to release the products earlier to gain some points with users.

"We're insulted." Apparently ad agency Rossin Greenberg Seronick & Hill was not too pleased with a Lotus lawsuit filed recently that charged the firm with attempting to sell Lotus's trade secrets to Microsoft. The agency called a press conference last week to announce that it intends to countersue Lotus and is seeking several million dollars. Rossin Greenberg President Neal Hill said Lotus damaged the agency's reputation with unfounded public allegations.

"And we're unsuited." Borland and Microsoft settled a suit last week over the former's hiring of the latter's former languages manager, Rob Dickerson. The out-of-court settlement permits Dickerson to continue working at Borland but prohibits him from working on Borland language products for eight months. Burying the hatchet in the ground rather than in the back, the two companies agreed to not hire from each other during the next six months.

Extended shopping trip. Ashton-Tate has been looking to license or acquire an SQL-based server product to prepare the firm for the next-generation data base market. The search, which has lead Ashton-Tate to the doorsteps of nearly every SQL data base provider known to man, has now stopped at tiny Interbase in Waltham, Mass. Although all the Ashton-Tate deals to date have fallen through, a reliable source predicts that an agreement with Interbase could be penned by the time this issue hits the streets — a claim we've heard before.

You scratch my back. One-third of the February Macworld show will include DEC-to-Macintosh connectivity, according to Deborah Coleman, Apple's chief financial officer. "There is nothing formal, but scientists and engineers are working on it, and a lot of dollars are being spent on it," Coleman said of the relationship between her company and DEC.

Dutch treat? Compugraphic is mulling a proposal from Agfa-Gevaert Graphics, its majority shareholder, to acquire the additional 17% of Compugraphic's outstanding shares that it does not already own. Agfa-Gevaert Graphics, a subsidiary of Netherlands-based Agfa-Gevaert N.V., is offering $21.50 for each share of the Wilmington, Mass., vendor of computerized typesetting equipment.

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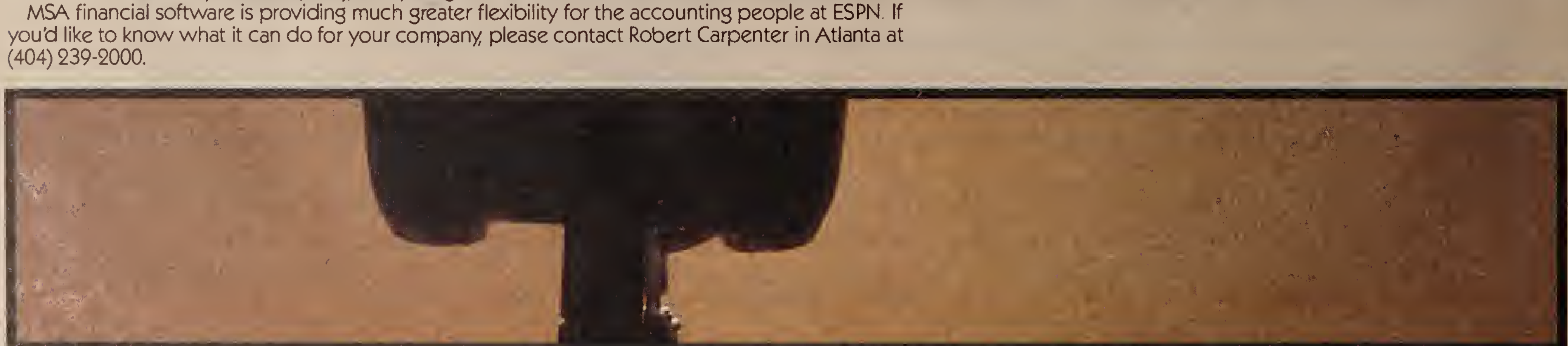

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